

### 3.15 Biological Resources and Wetlands

This section describes the biological resources and wetlands that could occur in the study region and identifies the potential for impacts on biological resources and wetlands as a result of the construction and operation of the various HST Alignment Alternatives<sup>1</sup>. The evaluation in this section includes potential adverse biological impacts on sensitive habitat and plant and wildlife species that have been listed or proposed as threatened or endangered under the federal Endangered Species Act (ESA) or California Endangered Species Act (CESA). The evaluation also includes potential adverse affects to wetlands under the jurisdiction of Section 404 of the CWA. This section also evaluates potential interference with the movement of native or migratory species, potential conflicts with policies protecting biological resources, and/or potential conflicts with an adopted Habitat Conservation Plan (HCP) or other approved habitat management plan.

#### 3.15.1 Regulatory Requirements and Methods of Evaluation

##### A. REGULATORY REQUIREMENTS

This section briefly identifies the key federal and state laws and regulations related to biological resources.

##### Federal Laws and Regulations

##### **Federal Endangered Species Act**

The ESA protects fish and wildlife species that have been identified as threatened or endangered by the USFWS or National Oceanic and Atmospheric Administration National Marine Fisheries Service (NOAA Fisheries). The ESA also protects their habitats. *Endangered* refers to species, subspecies, or distinct populations that are in danger of extinction through all or a significant portion of their range; *threatened* refers to species, subspecies, or distinct populations that are likely to become endangered in the near future.

The USFWS and NOAA Fisheries administer the ESA. In general, NOAA Fisheries is responsible for protection of ESA-listed marine species and anadromous fishes, whereas listed, proposed, and candidate wildlife and plant species and inland fish species are under USFWS jurisdiction. Section 9 of the ESA prohibits the unlawful take of federally threatened or endangered species. Take of listed species can be authorized through the Section 7 consultation process for actions either undertaken or funded by federal agencies, or take can be authorized through the Section 10 permit process for actions undertaken by nonfederal agencies. Federal agency actions include activities that are on federal land, conducted by a federal agency, funded by a federal agency, or authorized by a federal agency (including issuance of federal permits and licenses).

Under Section 7, the federal agency conducting, funding, or permitting an action (i.e., the federal lead agency) must consult with the USFWS or NOAA Fisheries, as appropriate, to ensure that the proposed action will not jeopardize endangered or threatened species or destroy or adversely modify designated critical habitat. If a proposed project “may affect” a listed species or designated critical habitat, the lead agency is required to prepare a biological assessment (BA) evaluating the nature and severity of the expected effect. In response, the USFWS issues a biological opinion (BO) with a determination that the proposed action either:

- May jeopardize the continued existence of one or more listed species (jeopardy finding) or result in the destruction or adverse modification of critical habitat (adverse modification finding) or

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<sup>1</sup> See Section 3.0, Introduction, for an explanation of how this section fits together with the HST Network Alternatives presented in Chapter 7, as well as for an overview of the information presented in the other chapters.

- Will not jeopardize the continued existence of any listed species (no jeopardy finding) or result in adverse modification of critical habitat (no adverse modification finding).

The BO issued by the USFWS may stipulate discretionary “reasonable and prudent” conservation measures. If the project does not jeopardize a listed species, the USFWS issues an incidental take statement to authorize the proposed activity.

In cases where a nonfederal entity is undertaking an action that does not require federal authorization, the take of listed species must be permitted by the USFWS through the Section 10 process. If the proposed project would result in the incidental take of a listed species, the applicant must first obtain a Section 10(a)(1)(B) incidental take permit (ITP). Incidental take under Section 10 is defined as take of federally listed fish and wildlife species “that is incidental to, but not the purposes of, otherwise lawful activities.” To receive an ITP, the nonfederal entity is required to prepare an HCP, which must include conservation measures that avoid, minimize, and mitigate the project’s impact on listed species and their habitat.

#### **Magnuson-Stevens Fishery Conservation and Management Act**

The Magnuson-Stevens Fishery Conservation and Management Act, as amended by the Sustainable Fisheries Act of 1996 (Public Law 104-267), requires all federal agencies to consult with NOAA Fisheries on all actions or proposed actions (permitted, funded, or undertaken by the agency) that may adversely affect fish habitats. Under the provisions of the act, Congress mandated the identification of habitats essential to managed species (e.g., commercial species) and measures to conserve and enhance this habitat. The act requires cooperation among NOAA Fisheries, the councils, fishing participants, and federal and state agencies to protect, conserve, and enhance Essential Fish Habitat (EFH). EFH is defined as those waters and substrate necessary to fish for spawning, breeding, feeding, and growth to maturity.

#### **Clean Water Act**

The CWA was enacted as an amendment to the federal Water Pollution Control Act of 1972, which outlined the basic structure for regulating discharges of pollutants to waters of the United States. The CWA now serves as the primary federal law protecting the quality of the nation’s surface waters, including lakes, rivers, and coastal wetlands.

The CWA empowers the EPA to set national water quality standards and effluent limitations and includes programs addressing both point-source and non-point-source pollution. Point-source pollution originates or enters surface waters at a single, discrete location, such as an outfall structure or excavation on a construction site. Non-point-source pollution originates over a broader area and includes urban contaminants in stormwater runoff and sediment loading from upstream areas. The CWA operates on the principle that all discharges into the nation’s waters are unlawful unless specifically authorized by a permit; permit review is the CWA’s primary regulatory tool.

Additional details on specific sections of the CWA are provided below.

#### *Section 401*

Under CWA Section 401, applicants for a federal license or permit to conduct activities that may result in the discharge of a pollutant into waters of the United States must obtain certification from the state in which the discharge would originate or, if appropriate, from the interstate water pollution control agency with jurisdiction over affected waters at the point where the discharge would originate. Therefore, all projects that have a federal component and may affect state water quality (including projects that require federal agency approval, such as issuance of a Section 404 permit) must also comply with Section 401.

*Section 402*

CWA Section 402 regulates construction-related stormwater discharges to surface waters through the NPDES program, administered by the EPA. In California, the State Water Board is authorized by the EPA to oversee the NPDES program through the RWQCBs (see Porter-Cologne Water Quality Control Act below). Most of the study region is under the jurisdiction of the San Francisco Bay RWQCB and the Central Valley RWQCB; southern Santa Clara Valley and northern San Benito County are under the jurisdiction of the Central Coast RWQCB.

NPDES permits are required for projects that disturb more than 1 ac (0.4 ha) of land and for discharge of groundwater into waterways. The NPDES permitting process requires the applicant to file a public NOI to discharge stormwater and to prepare and implement a SWPPP. The SWPPP includes a site map and a description of proposed construction activities. In addition, it describes the BMPs that will be implemented to prevent soil erosion and discharge of other construction-related pollutants (e.g., petroleum products, solvents, paints, cement) and potential groundwater pollutants that could contaminate nearby water resources. Permittees are required to conduct annual monitoring and reporting to ensure that BMPs are correctly implemented and effective in controlling the discharge of stormwater-related pollutants.

*Section 404*

CWA Section 404 regulates the discharge of dredged and fill materials into waters of the United States. *Waters of the United States* refers to oceans, bays, rivers, streams, lakes, ponds, and wetlands, including nonperennial drainages with a defined bed and bank and any drainage channel that conveys natural runoff, even if it has been realigned, and seasonal and perennial wetlands, including coastal wetlands.

Applicants must obtain a permit from the U.S. Army Corps of Engineers (USACE) for all discharges of dredged or fill material into waters of the United States, including wetlands, before proceeding with a proposed activity. As part of the wetland delineation and verification process, the USACE will determine whether the wetlands in the study area are regulated under Section 404.

The USACE may issue either an individual permit evaluated on a case-by-case basis or a general permit evaluated at a program level for a series of related activities. General permits are preauthorized and are issued to cover multiple instances of similar activities expected to cause only minimal adverse environmental effects. Nationwide permits (NWP) are a type of general permit issued to cover particular fill activities. Each NWP specifies particular conditions that must be met for the NWP to apply to a particular project. Waters of the United States in the study area are under the jurisdiction of the USACE Sacramento District.

Compliance with Section 404 requires compliance with several other environmental laws and regulations. The USACE cannot issue an individual permit or verify the use of a general permit until the requirements of the NEPA, ESA, and National Historic Preservation Act have been met. In addition, the USACE cannot issue or verify any permit until a water quality certification or waiver of certification has been issued pursuant to Section 401.

Certain activities are exempt from the Section 404 permitting process, including:

- Farming, ranching, and forestry activities that are considered normal and ongoing (as of 1985 conditions), such as plowing, harvesting, and minor drainage of upland areas to waters of the United States.
- Construction and maintenance of stock ponds and irrigation ditches.
- Maintenance of drainage ditches.
- Construction of temporary sedimentation basins in upland areas.

- Construction and maintenance of farm, forest, and mining roads in accordance with BMPs.
- Other activities regulated by an approved program of BMPs authorized by CWA Section 208(b)(4).

Section 404 permits may be issued only for the project's LEDPA. That is, authorization of a proposed discharge is prohibited if there is a practicable alternative that would have less adverse impacts and lacks other significant adverse consequences.

*Section 10 of the Rivers and Harbors Act*

Section 10 of the Rivers and Harbors Act of 1899 requires authorization from the USACE for the construction of any structure in or over any navigable waters of the United States. Tidal waterways within the Sacramento/San Joaquin drainage basin are considered navigable waters. The law applies to any dredging, excavation, filling, or other modification of a navigable water of the United States, as well as to all structures, including bank protection (e.g., riprap) and mooring structures, such as those in a marina. Structures or work outside the limits defined for navigable waters of the United States requires a Section 10 permit if the structure or work affects the course, location, or condition of the water body.

**Fish and Wildlife Coordination Act**

The Fish and Wildlife Coordination Act requires consultation with the USFWS when the waters of any stream or other body of water are proposed, authorized, permitted, or licensed to be impounded, diverted, or otherwise controlled or modified under a federal permit or license (16 USC 661-667[e]). Most USFWS comments on applications for permits under CWA Section 404 or River and Harbors Act Section 10 are conveyed to the USACE through the consultation process required by this act.

The USFWS provides advisory comments and recommends mitigation measures to avoid impacts on wetlands or modify activities that may directly affect wetlands. Mitigation recommended by the USFWS may include restoring or creating habitat to avoid a net loss of wetland functions and values. Although consultation with the USFWS is required, the USACE is not required to implement USFWS recommendations.

**Migratory Bird Treaty Act**

The Federal Migratory Bird Treaty Act (16 USC 703, Supp. I, 1989) prohibits killing, possessing, or trading in migratory birds except in accordance with regulations prescribed by the U.S. Secretary of the Interior. This act encompasses whole birds, parts of birds, and bird nests and eggs.

Executive Order 13186, signed January 10, 2001, directs each federal agency taking actions that will have or will likely have a negative impact on migratory bird populations to work with the USFWS to develop an MOU to promote the conservation of migratory bird populations. Protocols developed under the MOU will include the following agency responsibilities:

- Avoid and minimize, to the extent possible, adverse impacts on migratory bird resources when coordinating agency actions.
- Restore and enhance habitat of migratory birds, as practicable.
- Prevent or abate the detrimental alteration of environment for the benefit of migratory birds, as practicable.

**Bald and Golden Eagle Protection Act of 1947, as amended**

The federal Bald and Golden Eagle Protection Act (16 USC 668 *et seq.*) makes it unlawful to import, export, take, sell, purchase, or barter any bald eagle or golden eagle, or their parts, products, nests, or eggs. The term *take* includes pursuing, shooting, poisoning, wounding, killing, capturing, trapping, collecting, molesting, or disturbing. Exceptions may be granted by the USFWS for scientific

or exhibition use, or for traditional and cultural use by Native Americans. However, no permits may be issued for import, export, or commercial activities involving eagles.

#### **Coastal Zone Management Act**

The Coastal Zone Management Act (CZMA) of 1972 (administered by NOAA Fisheries) provides for the management of the nation's coastal resources, including the Great Lakes, and balances economic development with environmental conservation.

The CZMA is a voluntary federal-state partnership that is designed to encourage state-tailored coastal management programs. It outlines two national programs, the National Coastal Zone Management Program and the National Estuarine Research Reserve System, and aims to balance competing land and water issues in the coastal zone, while estuarine reserves serve as field laboratories to provide a greater understanding of estuaries and how humans impact them. The overall program objectives of CZMA remain balanced to "preserve, protect, develop, and where possible, to restore or enhance the resources of the nation's coastal zone."

#### **Executive Order 11990, Protection of Wetlands**

Executive Order 11990 (issued in 1977) is an overall wetland policy for all federal agencies managing federal lands, sponsoring federal projects, or providing federal funds to state and local projects. It requires federal agencies to follow procedures for avoidance, mitigation, and preservation, with public input, before proposing new construction in wetlands. Compliance with CWA Section 404 permit requirements may constitute compliance with the requirements of Executive Order 11990. The DOT's policies for complying with Executive Order 11990 are set forth in DOT Order 5660 1.A, and its regulations for implementing Executive Order 11990 are provided in 23 CFR 777.

#### **Executive Order 13112, Invasive Species**

Executive Order 13112 (February 3, 1999) directs all federal agencies to prevent and control introductions of invasive species in a cost-effective and environmentally sound manner. It established a National Invasive Species Council (NISC) made up of federal agencies and departments and a supporting Invasive Species Advisory Committee (ISAC) composed of state, local, and private entities. The NISC and ISAC have prepared a national invasive species management plan (2001) that recommends objectives and measures to implement the order and prevent the introduction and spread of invasive species.

#### State Laws and Regulations

##### **California Endangered Species Act**

CESA protects plant and wildlife species that have been designated by CDFG as threatened or endangered. CESA prohibits the take of endangered and threatened species. Under CESA, *take* is defined as an activity that would directly or indirectly kill an individual of a species. The definition of *take* does not include harm or harassment of state-listed species or the destruction of their habitat. In accordance with the CESA, CDFG has jurisdiction over state-listed species (California Fish and Game Code 2070). Additionally, CDFG maintains lists of species of special concern that are defined as species that appear to be vulnerable to extinction because of declining populations, limited ranges, or continuing threats.

##### **California Fish and Game Code**

###### *Fully Protected Species*

The California Fish and Game Code provides protection from take for a variety of species, referred to as *fully protected species*. Fully protected fish species are protected under Section 5515; fully protected amphibian and reptile species are protected under Section 5050; fully protected bird species are protected under Section 3511; and fully protected mammal species are protected under Section 4700. The California Fish and Game Code defines *take* as "hunt, pursue, catch, capture, or



kill, or attempt to hunt, pursue, catch, capture, or kill.” Except for take related to scientific research, all take of fully protected species is prohibited.

*Sections 3503 and 3503.5*

Section 3503 of the California Fish and Game Code prohibits the killing of birds or the destruction of bird nests. Section 3503.5 prohibits the killing of raptor species and the destruction of raptor nests. Many bird species could potentially nest in the study area or vicinity. These nests would be protected under these sections of the California Fish and Game Code.

**California Native Plant Protection Act**

Regarding rare plant species, CESA defers to the California Native Plant Protection Act of 1977. This act prohibits importing rare and endangered plants into California, taking rare and endangered plants, and selling rare and endangered plants. State-listed plants are protected mainly in cases where state agencies are involved in projects under CEQA. In these cases, plants listed as rare under the Native Plant Protection Act are not protected under CESA but can be protected under the act through the CEQA process.

**Streambed Alterations**

Under Sections 1600–1607 of the California Fish and Game Code, the CDFG has jurisdictional authority over rivers, streams, and lakes from which fish and wildlife derive benefit. Under Section 1602, CDFG regulates projects that will 1) divert, obstruct, or change the natural flow or the bed, channel, or bank of any river, stream, or lake designated by the department in which there is at any time an existing fish or wildlife resource or from which these resources derive benefit; 2) use material from the streambeds designated by the department; or 3) result in the disposal or deposition of debris, waste, or other material containing crumbled, flaked, or ground pavement where it can pass into any river, stream, or lake designated by the department. A proponent of a project that has the potential to affect a stream- or lakebed is required to notify the CDFG of the proposed activity.

The ephemeral drainages within the study area are likely to meet the California Fish and Game Code’s definition of a stream and would be subject to CDFG regulation, and the CDFG would need to be notified before undertaking activities in the ephemeral drainages. It is likely that CDFG would require a lake- or streambed alteration agreement for construction across these drainages.

**Porter-Cologne Water Quality Control Act**

Section 13260(a) of the Porter-Cologne Water Quality Control Act (contained in the California Water Code) requires any person discharging waste or proposing to discharge waste, other than to a community sewer system, within any region that could affect the quality of the waters of the State to file a report of waste discharge (ROWD). The discharge of dredged or fill material may constitute a discharge of waste that could affect the quality of waters of the State.

Historically, California relied on its authority under Section 401 of the CWA to regulate discharges of dredged or fill material to California waters. That section requires an applicant to obtain “water quality certification” from the State Water Board through its RWQCBs to ensure compliance with state water quality standards before certain federal licenses or permits may be issued. The permits subject to Section 401 include permits for the discharge of dredged or fill materials (CWA Section 404 permits) issued by the USACE. Waste discharge requirements under the Porter-Cologne Water Quality Control Act were typically waived for projects that required certification.

In 2004, the State Water Board issued Water Quality Order No. 2004-004-DWQ. This order addresses general waste discharge requirements (general WDRs) for discharges of dredged or fill material to waters deemed by the USACE to be outside its jurisdiction and therefore not subject to Section 404 of the CWA. In general, these are waters found to be “isolated.” These general WDRs are restricted to discharges of less than 0.2 ac (0.08 ha). If a discharge does not qualify for general WDRs, an ROWD must be filed using a 401 Certification Application. Because the impacts on the

ephemeral drainages within the study area would be temporary and less than 0.2 ac (0.08 ha) of land, a ROWD would not need to be filed.

#### **California Coastal Act**

The California Coastal Act requires preparation of a local coastal program (LCP) by local municipalities located in whole or in part in the coastal zone. The LCP consists of a land use plan and its implementing measures (e.g., zoning ordinances). The act requires the incorporation of its policies into local LCPs. Policies relevant to biological resources are listed below.

- Coastal Act Section 30121 defines wetlands as “lands within the coastal zone which may be covered periodically or permanently with shallow water and include saltwater marshes, freshwater marshes, open or closed brackish water marshes, swamps, and mudflats.”
- Coastal Act Section 30233 (a) states that the diking, filling, or dredging of wetlands can only be permitted for certain specified activities where there is no feasible less environmentally damaging alternative, and where feasible mitigation measures have been provided to minimize adverse effects.
- Coastal Act Section 30107.5 defines an environmentally sensitive area as “any area in which plants or animal life or their habitats are either rare or especially valuable because of their special nature or role in an ecosystem and which could easily be disturbed or degraded by human activities.”
- Coastal Act Section 30240 states that “environmentally sensitive habitat areas shall be protected against any significant disruption of habitat values, and only uses dependent on those resources shall be allowed within those area.” This section also states that “development in areas adjacent to environmentally sensitive habitat areas and parks and recreational areas shall be sited and designed to prevent impacts which would significantly degrade those areas and shall be compatible with the continuance of those habitat and recreation areas.”

#### **Bay Conservation and Development Commission**

The McAteer-Petris Act, passed by the State of California in 1965, established the San Francisco Bay Conservation and Development Commission (BCDC) as the state agency responsible for regulating development in and around San Francisco Bay and mandated the planning effort that resulted in development of the San Francisco Bay Plan (Bay Plan) (Association of Bay Area Governments 1969, as amended). The Bay Plan describes the values associated with the Bay and presents policies and planning maps to guide future uses of the Bay and its shoreline. Under the Bay Plan, priorities for suitable uses of the shoreline include ports, water-related industry, airports, wildlife refuges, and water-related recreation. The Bay Plan also proposes adding land to the Bay refuge system; encourages public access via marinas, waterfront parks, and beaches; and requires the provision of maximum access along the waterfront and certain shorelines, except where public uses conflict with other significant uses or where public use is inappropriate because of safety concerns.

BCDC is responsible for implementing the policies of the Bay Plan. All projects proposing development within the Bay Area are required to apply to BCDC for a San Francisco Bay permit and to demonstrate compliance with the McAteer-Petris Act and the Bay Plan.

The CZMA encourages states to voluntarily develop coastal zone management programs (CZMPs) to preserve and protect the unique features of each coastal area. Partly in response to these federal recommendations, the California Coastal Act of 1976 established the California Coastal Commission (CCC) and recognized the BCDC as the state agency with primary responsibility.

Areas subject to jurisdiction of the BCDC extend to all areas of the Bay that are subject to tidal action, including a 100-foot shoreline band surrounding the Bay from the mean high-water mark. In

addition, BCDC's San Francisco Bay jurisdiction includes subtidal areas, intertidal areas, and tidal marsh areas that are between mean high tide and 5 ft (1.5 m) above the mean sea level.

It is necessary to obtain BCDC approval prior to undertaking any of the following activities:

- Filling: Placing solid material, building pile-supported or cantilevered structures, disposing of material, or permanently mooring vessels in the Bay or in certain tributaries of the Bay.
- Dredging: Extracting material from the Bay bottom.
- Shoreline Projects: Nearly all work, including grading, on the land within 100 ft (30 m) of the Bay shoreline.
- Suisun Marsh Projects: Nearly all work, including land divisions, in the portion of the Suisun Marsh below the 10-foot-contour level.
- Other Projects: Any filling, new construction, major remodeling, substantial change in use, or many land subdivisions in the Bay, along the shoreline, in salt ponds, duck hunting preserves, or other managed wetlands adjacent to the Bay.
- Federal Projects: In addition to carrying out its regulatory authority under state law, the federal CZMA allows the BCDC to review federal projects and projects that require federal approval or are supported with federal funds. The BCDC carries out its "federal consistency" responsibilities by reviewing federal projects much like it does permit applications. However, the BCDC cannot require federal agencies to submit permit applications and cannot impose conditions in its federal consistency decisions. Nevertheless, federal agencies and applicants for federal approvals must provide the project details, data, and other material required by the form to ensure that the BCDC has the information it needs to evaluate federal projects. Work on a project needing BCDC authorization cannot begin until the necessary approval has been secured (San Francisco Bay Conservation and Development Commission 2006).

## B. METHOD OF EVALUATION OF IMPACTS

### Data Collection and Geographic Information System Mapping

The proposed HST Alignment Alternatives would cross a variety of biotic communities and could potentially result in impacts on many plant and wildlife species and many water resources. This discussion of impacts uses the plant taxonomy and nomenclature of Hickman (1993). The scientific nomenclature and common names of wildlife follow those of the most recent Special Animals List (California Department of Fish and Game 2006).

A land cover map was developed using the best available data appropriate for a regional assessment of the study region. The GIS data mapping methods for this project used methods developed for other large projects in the region, including the Land Cover GIS Metadata that were developed to aid in the development of the Pacific Gas & Electric operation and maintenance HCPs currently being prepared for the San Joaquin Valley and the Bay Area. The coverage of these two HCPs overlaps in the study region.

Data from eight sources were used to generate this land cover.

- San Francisco Estuary Institute (SFEI) Baylands Dataset: The SFEI published the Baylands dataset in 1998 as part of EcoAtlas, a digital product that contains both historical and current information about the natural resources around the Bay Area. This dataset contains primarily wetlands that surround the San Francisco Bay and Suisun Marsh. These data support a long-term monitoring effort of baylands and associated habitats. SFEI used a number of sources to produce the Baylands dataset, including high-resolution color infrared photos (San Francisco Estuary Institute 1998).



- **California Department of Forestry and Fire Protection (CDF) Hardwood Rangeland Vegetation Dataset:** The CDF Hardwood Rangeland Vegetation dataset comprises a series of maps of vegetation types for areas below 5,000 ft (1,524 m) in elevation. It was originally mapped in 1981 from 1:24,000-scale aerial photographs and then updated using 1990 LANDSAT TM imagery. It consists of 82-ft (25-m) pixel spacing coded with a cover type. For woodland and forest cover types, each pixel also is coded with a canopy closure class. CDF maintains this dataset (California Department of Forestry and Fire Protection 1994).
- **CDFG's Wetland and Riparian Dataset:** Ducks Unlimited produced the CDFG Wetland and Riparian dataset from multispectral satellite imagery to inventory wetlands, riparian woody areas, and surrounding land cover. This dataset is maintained by CDFG (California Department of Fish and Game 1997). Imagery from both the summer and winter was used to improve mapping accuracy.
- **California Gap Analysis Program Dataset:** The California Gap dataset comprises land cover maps for 10 major regions of the state. It was derived from satellite imagery, vector overlays of existing vegetation and land use maps, and forest inventory data. Upland types were mapped with a minimum mapping unit of 247 ac (100 ha), major wetlands were mapped with a minimum mapping unit of 99 ac (40 ha), and smaller wetlands were encoded as attributes of upland polygons (Davis et al. 1998).
- **Important Farmland (DOC):** For areas with modern soil surveys, this coverage maps grazing, farming, and urban lands (DOC 2000). It is based on aerial photographs of various scales and field reconnaissance and is updated biannually. Farmland and urban areas have a minimum mapping unit of 10 ac (4 ha), and urban is defined as a building density of at least 1 unit to 1.5 ac (0.6 ha), or approximately six structures to a 10-ac (4 ha) parcel. Only the urban categories were used in the land cover layer from this data set.
- **Urban Boundaries (California Department of Water Resources [CDWR]):** Only the urban land use types were used from this data set. The data cover a range of years (1994–1999) because individual counties are responsible for maintaining land use. These data were derived from aerial photo interpretation (scale not available) and extensive field visits.
- **California Department of Forestry and Fire Protection (CDF) Development Footprint Dataset:** This dataset, published by CDF in 2003, is based on census block group data, land ownership, and urbanized-area data from the 2000 U.S. Census. It is supplemented with 1990 National Landcover Data from the USGS. CDF maintains this dataset (California Department of Forestry and Fire Protection 2003a).
- **CDF Land Cover Mapping and Monitoring Program Vegetation Dataset:** The U.S. Forest Service prepared the source mapping for the CDF Land Cover Mapping and Monitoring Program (LCMMP) Vegetation Dataset between 1979 and 1981 (Parker and Matyas 1979). The mapping process involved photo interpretation of color infrared prints of multispectral satellite imagery acquired in the 1970s and updated in 1996. The CDF created the digital vegetation coverage by scanning the source maps. The minimum mapping unit of the CDF system is 2.5 ac (1 ha) (California Department of Forestry and Fire Protection 2003b).

As part of the data assembly process, a classification scheme was created for the study region based on a review of the land cover categories in each data set and the requirements of the land cover–based analyses in the study area. A hierarchical approach was used to assemble the land cover data for the study region. The various data sets described above were compiled in GIS. A classification system for land cover types was developed for the study area based on Holland (1986). This classification was designed to support the impact analysis for biological resources identified in the study area.

An aerial survey (gathered by plane, helicopter, and/or aerial images) was conducted along each alignment to supplement the GIS data and to verify the land cover types and extents identified during the mapping. The aerial survey was used to record small occurrences of land cover types not identified in the GIS analysis due to the minimum mapping unit data constraints in the GIS datasets (e.g., riparian and wetland habitats).

Wetlands were identified using the National Wetland Inventory (NWI) maintained by the USFWS. NWI digital data files are records of wetland locations and classification as developed by the USFWS. The NWI maps do not show all wetlands because data are derived from aerial photo interpretation with varying limitations due to scale, photo quality, inventory techniques, and other factors. Consequently, the maps tend to show wetlands that are readily photo-interpreted given consideration of photo and map scale. This level of information, though incomplete for some areas, provides a general overview of areas with potential sensitivity for impacts and where subsequent field work and wetland delineation would be conducted in the next phase of environmental evaluation.

Digitized information for vernal pools was obtained from the CDFG and included USFWS Holland vernal pools coverage with density classes and supporting metadata file; Northern San Joaquin Valley vernal pool complexes identified by California State University, Chico; and a vernal pool species layer showing critical habitat for a suite of vernal pool species.

Biological resources considered in the analysis of the proposed alternatives were compiled using the following sources:

- California Natural Diversity Database (CNDDDB 2007) records.
- California Native Plant Society's (CNPS's) (2001) *Inventory of Rare and Endangered Vascular Plants of California*.
- Draft East Contra Costa County HCP/ Natural Community Conservation Plan (NCCP) and EIS/EIR (East Contra Costa County Habitat Conservation Plan Association 2005).
- Recovery Plan for Vernal Pool Ecosystems of California and Southern Oregon (U.S. Fish and Wildlife Service, October 2005).
- Recovery Plan for the California Red-Legged Frog (U.S. Fish and Wildlife Service 2002).
- Recovery Plan for Chaparral and Scrub Community Species East of San Francisco Bay, California (U.S. Fish and Wildlife Service, November 2002).
- Recovery Plan for Upland Species of the San Joaquin Valley, California (U.S. Fish and Wildlife Service 1998).
- PG&E Operation and Maintenance HCPs for the San Joaquin Valley and Bay Area (in progress).
- Recovery Plan for Serpentine Soil Species of the San Francisco Bay Area (U.S. Fish and Wildlife Service 1998).
- Recovery Plan for Coastal Plants (in progress).
- San Joaquin County Multi-Species Conservation Plan.
- Information on wildlife movement corridors obtained from the Missing Linkages report prepared by the California Wilderness Coalition (2000).

#### Biological Resources and Wetlands Impact Evaluation

The biological resources study area representing the potentially affected environment for the analysis and a representative impact area were consistently applied for each HST Alignment Alternative. The impact analysis area was 50 ft (15 m) width for aerial and at-grade configurations. No surface

impact area was analyzed for tunnel sections because these sections would be underground, although tunnel portals were included as at-grade sections. The representative impact areas (project footprint) of proposed HST Alignment Alternatives were overlaid on the land cover data to determine the extent of land cover types potentially impacted. The acreages for each land cover type bisected by the alternative alignments were calculated.

Because of the nonuniform coverage of the NWI data, the California Spatial Information Library's Hydrographic database (water resources) was used to estimate the length of waters potentially impacted for each HST Alignment Alternative. This database provides the best indicator of the presence of wetlands for this program-level analysis. Comprehensive and complete information exists for the water resources and was readily applied for each alignment to determine the potential for impacting water resources. Vernal pools provide important habitat for many special-status plant and wildlife species and occur as small areas within grassland and other land cover types. GIS data for vernal pools were also used. At the project level, field surveys will provide areas of potential impact along the alignment alternatives carried forward for site-specific analysis.

#### Special-Status Species and Habitat Impacts Evaluation

For each species with potential to occur in the study area, information was gathered on status, distribution, threats, population trends, and conservation and management efforts. Species that are included in the analysis of impacts from the proposed project include species:

- Listed as threatened or endangered under ESA.
- Proposed for listing as threatened or endangered under ESA.
- Candidates for possible future listing as threatened or endangered under ESA (66 FR 54808, October 30, 2001).
- Considered by CNPS to be "rare, threatened or endangered in California".
- Listed as threatened or endangered under CESA.
- Fully protected in California (California Fish and Game Code Section 3511[birds], 4700 [mammals], and 5050 [reptiles and amphibians]).
- California species of special concern (CSC) (CDFG's Special Animals List 2006).
- Identified by CDFG and the Point Reyes Bird Observatory (PRBO) as a bird species of special concern in California (list developed in 2001 but not yet adopted).

Species were analyzed if one of the alternative alignments occurred in the range for the species. Special-status plant and special-status wildlife tables were developed for those species that have a potential to occur in the study areas. Information in the tables includes scientific and common name, status, distribution, habitat requirements, blooming period (plants), and the alignment alternative(s) the species could occur in. The distributions of these species were identified based on a review of the documents and literature listed above. No field or onsite surveys were conducted to identify sensitive species for this Program EIR/EIS.

The amount of suitable habitat (as identified by a land cover type) for special-status species that could be directly or indirectly affected by the HST Alignment Alternatives was calculated. Potential habitat fragmentation, impacts on wildlife movement corridors, and areas identified as critical habitat were also considered.

Determining the extent of habitat for covered plant species is complicated because the exact location of all populations is not known, and a complete set of habitat attributes is often not known for most species. Therefore, the focus of the analysis concentrated on habitat known to be occupied and

habitat that possesses the necessary characteristics for the species in question but that is not known to be occupied because of a lack of surveys or reporting.

A habitat model was developed for covered plant species based on correlations among the known physical and biological attributes associated with each land cover type and the known biological and physical conditions that define each species' habitat. Information from known occurrences was used to determine the existing distribution of the species and habitat attributes.

### C. CEQA SIGNIFICANCE CRITERIA

The significance criteria for identifying potential impacts on biological resources from proposed projects/actions are based on federal and state guidelines and general indicators of significance, including guidelines or criteria in NEPA, CEQA, CWA, CESA, ESA, and California Fish and Game Code. Site-specific criteria would be applied at the project level of environmental analysis when permits are being sought after a decision is made to proceed with a preferred alignment alternative, following this program-level analysis.

Based on the presence or absence of sensitive resources, an alignment alternative may have a significant impact on biological resources if its implementation would result in any of the following:

- Potential modification or destruction of habitat, movement/migration corridors, or breeding areas for endangered, threatened, rare, or other special-status species described above.
- Potential loss of a substantial number of any species that could affect the abundance or diversity of that species beyond the level of normal variability.
- Potential impacts on or measurable degradation of protected habitats, sensitive natural vegetation communities, wetlands, or other habitat areas plans, policies, or regulations.
- Potential conflict with the provisions of an adopted HCP, NCCP<sup>2</sup>, or other approved local, regional, or state HCP.

## 3.15.2 Affected Environment

### A. STUDY AREA DEFINED

The biological resources and wetlands study area for direct impacts is defined as 50 ft (15 m) on each side of the alignment. The study area for indirect impacts is 1,000 ft (305 m) in urban areas and 0.25 mile (0.41 km) in rural areas on each side of the alignment. The study area for direct impacts of stations is the station area, and the indirect impact study area for stations is 1,000 ft (305 m) in urban areas and 0.25 mile (0.41 km) of alignment centerlines and around station and facility areas in undeveloped areas, including biologically sensitive locations.

### B. GENERAL DISCUSSION OF BIOLOGICAL RESOURCES AND WETLANDS

The following is a brief description of the resources and land cover types studied. A more detailed description of these resources and the sources of information used to obtain the descriptions are provided in Appendix 3.15-A. In addition, this section discusses HCPs, critical habitat<sup>3</sup> areas, and other conservation plans or areas that could potentially be affected by one or more of the alignments discussed in this document.

<sup>2</sup> The NCCP program of CDFG is an effort by the State of California and many private and public partners that takes a broad-based ecosystem approach to planning for the protection and perpetuation of biological diversity. An NCCP identifies and provides for the regional or areawide protection of plants, animals, and their habitats, while allowing compatible and appropriate economic activity. CDFG and USFWS provide the necessary support, direction, and guidance to NCCP participants in these functions.

<sup>3</sup> Critical habitat refers to areas shown on maps developed by USFWS that provide habitat for threatened and endangered species.

### Sensitive Vegetation Communities

Sensitive vegetation communities are natural communities (assemblages of species, both plant and wildlife, forming communities) and wildlife habitats that are unique, of relatively limited distribution in the region, or of particularly high wildlife value. Sensitive vegetation communities are afforded special protection by federal, state, and local regulations.

### Sensitive Plant Species

Sensitive plant species include plant species that have been afforded special status and/or recognition by federal or state resource agencies, as well as private conservation organizations, because of documented or perceived decline or limitation of population size or geographical extent.

### Sensitive Wildlife Species

Sensitive wildlife species include wildlife species that have been afforded special status by federal or state resource agencies, as well as private conservation organizations, because of documented or perceived decline or limitation of population size or geographical extent. Special-status species include wildlife, fish, or animals that are legally protected or that are otherwise considered sensitive by federal, state, or local resource conservation agencies and organizations. Special-status species include species listed as state and/or federal threatened or endangered species under ESA or CESA, those that have been proposed for listing, those considered as candidates for listing, and those identified by CDFG as a California species of special concern.

### Critical Habitats

Critical habitats are areas that are either occupied by species that are federally listed as threatened or endangered or areas that provide them with suitable habitat and within which are found the geographical and physical features that are essential to the conservation of the species. As defined under the ESA, conservation is defined as "any and all methods and procedures used to bring a species to recovery; the point at the protections of the ESA are no longer needed."

### Core Areas for Recovery of Federally Listed Species

The USFWS has developed recovery plans for many federally listed species. In these plans, the USFWS has identified core areas for recovery of these listed species. These core areas are areas that provide essential habitat for these species and where recovery efforts will be focused.

### Wildlife Movement/Migration Corridors

Wildlife movement/migration corridors link together areas of wildlife habitat that are otherwise separated by rugged terrain, changes in vegetation, or human disturbance. The fragmentation of open space areas by urbanization tends to create isolated islands of wildlife habitat. The fragmentation of wildlife habitat into isolated islands is especially detrimental to threatened or endangered species that are subject to localized extinctions due to natural or human-induced causes. Wildlife movement and migration corridors allow for the recolonization of areas that may have experienced greatly reduced populations or localized extinctions. Wildlife movement/migration corridors also allow for genetic mixing and flow between otherwise segregated populations of a species.

### Wetlands and Other Waters of the United States

Wetlands and other waters of the United States, including lakes, rivers, and streams, are afforded protection under federal and state laws. Special aquatic resources, which include seasonal wetlands and vernal pools, are considered an important subset of these waters because of their importance to plant and wildlife species.



The following land cover types exist in the affected environment and were studied.

**Seasonal Wetland**

Seasonal wetlands support ponded or saturated soil conditions but generally only during winter and spring. The vegetation is composed of wetland generalists, such as hyssop loosestrife, cocklebur, Mediterranean barley, and Italian ryegrass, which typically occur in frequently disturbed sites, such as along streams. For the purposes of this analysis, vernal pools are included in this seasonal wetland category. Vernal pools include northern claypan and northern hardpan vernal pools as classified by Holland (1986). These communities are dominated by native annual species that germinate, grow, and flower as the pools dry up in the spring. Characteristic species include goldfields, downingia, meadowfoam, navarettia, and popcorn flower.

**Agriculture**

Agricultural lands within the project area may include orchards, vineyards, row crops, or grazing land. The land may or may not be flooded for part of the year. It may include land with very little vegetation present, including fallow or recently plowed fields.

**Open Water**

Open water land cover types include natural and human-made aquatic habitats that support submerged or floating vegetation, such as lakes, reservoirs, flood control basins, ponds (including stock ponds), sloughs, canals, and rivers. Many of the large water bodies include permanent and seasonal wetland and riparian communities along their edge.

**Urban/Developed**

Large areas of residential and commercial development occur throughout the study area and are present in some capacity along the alignment alternatives. In developed areas are small patches of disturbed open lands that are either unvegetated or vegetated with ruderal species. Because these areas are often fenced, occur in active commercial or residential areas, and are frequently disturbed, they are considered developed for the purposes of this analysis. Vegetation is restricted to landscaped areas and consists primarily of horticultural trees and shrubs, with finite areas of herbaceous flowering plants and turf grass.

**Permanent Freshwater Wetland**

This land cover type is similar to the Coastal and Valley Freshwater Marsh as classified by Holland (1986). Dominant vegetation in permanent freshwater wetlands includes cattails and tules and bulrushes.

**Grassland**

This land cover type is similar to the Non-Native Grassland as classified by Holland (1986). Nonnative grassland is a herbaceous community dominated by naturalized annual grasses with intermixed perennial and annual forbs. Annual grassland in the study area is likely to exhibit low levels of diversity and is dominated by the following species: ripgut brome, yellow star-thistle, Italian ryegrass, and wild oat. Some areas of annual grassland may also contain scattered oak woodlands and vernal pools.

**Shrubland**

This land cover type includes Northern Mixed Chaparral and Interior Coast Range Saltbush Scrub as classified by Holland (1986). It is made up of impenetrably dense, evergreen, leathery-leaved shrubs that are adapted to frequent fires, and it occurs on diverse substrates. Chaparral may be successional to conifer forests or oak woodlands, as tree seedlings can be found beneath the shrub canopies.

**Bay Waters**

Bodies of saltwater occurring in bays that are subject to tidal action.

**Unvegetated Flats**

Tidal flats, mud banks, and sand bars visible above the water level during summer.

**Riparian Habitat**

This community is dominated by several willow species, including sandbar willow and arroyo willow. Some riparian areas have an understory of Himalayan blackberry. Other species often observed in riparian areas are giant reed, pampas grass, button willow, Fremont's cottonwood, and interior live oak.

**Montane Hardwood Forest**

This land cover type is similar to the Broadleaved Upland Forest as classified by Holland (1986). Montane hardwood has a hardwood canopy layer with a sparse shrub layer. The dominant trees in the plan area are most likely canyon live oak, California Bay, and Pacific madrone.

**Managed Bay Marsh**

This land cover type is similar to the Northern Coastal Salt Marsh as classified by Holland (1986). It is found in areas of the Bay that are protected from the wave action and strong winds of the seashore. The soil is generally very wet and in some areas is periodically inundated with saltwater by tidal action. Plants often found in this habitat type include pickleweed, salt grass, and cord grass.

**Saline-Brackish Permanent Wetland**

This land cover type is similar to the Coastal Brackish Marsh as classified by Holland (1986). Saline-Brackish Permanent Wetland habitat is defined to include portions of San Francisco, San Pablo, and Suisun Bays and the Delta that support saline-tolerant emergent wetland plant species in the intertidal zone or on lands that historically were subject to tidal exchange (i.e., diked wetlands).

**Oak Woodland/Foothill Pine**

This land cover type is similar to the Digger Pine-Oak Woodland as classified by Holland (1986). Dominant species include foothill pine and blue oak. Understories may be open and herbaceous or closed and shrubby. This type occurs on a variety of sites below the conifer forests in California. Associated tree species in the oak woodland/foothill pine classification include interior live oak and California buckeye.

**Salt Pond**

Salt production in the Bay area involves the use of a series of salt ponds. As the water moves from one pond to the next, evaporation causes successive ponds to become saltier. Plant and animal species found in a given salt pond are determined by the concentration of salt.

**Valley Oak Woodland**

Valley oak woodland as classified by Holland (1986) is strongly dominated by valley oak but may also contain blue oak, California sycamore, black walnut, and box elder. The canopy layer is typically open, forming a savanna structure rather than woodland. Associated understory shrubs include elderberry, poison oak, toyon, and California blackberry. The herb layer is often dominated by leymus grass and includes a variety of annual and perennial grasses and forbs.

**C. BIOLOGICAL RESOURCES IN THE BAY AREA TO CENTRAL VALLEY REGION**

The following is a brief discussion of resources for the topics described above. Figures 3.15-1 and 3.15-2 show the general locations of sensitive habitat and wetlands in the study region. Figure 3.15-3 illustrates the wildlife movement corridors in this region.

**San Francisco to San Jose Corridor**

The San Francisco to San Jose Corridor includes the western portion of the San Francisco Bay Area from San Francisco (San Francisco County) south through eastern San Mateo County to San Jose

(Santa Clara County). The San Francisco Bay and the Santa Clara Valley geophysical features dominate the areas traversed by this corridor. The major watersheds that correspond to these geophysical features are the San Francisco Bay watershed, including the Guadalupe River and Coyote Creek. Elevation along the proposed HST alignment alternatives in this region ranges from sea level to around 200 ft (61 m).

#### **Vegetation Communities**

Vegetation communities in this corridor include seasonal wetland, agriculture, open water, urban/developed, permanent freshwater wetlands, grasslands, shrubland, Bay waters, and unvegetated flats.

#### **Water Resources**

The Cowardin system to classify wetlands and deepwater habitat systems was developed for the USFWS in 1979. Under this system, wetlands are of two basic types: coastal (also known as tidal or estuarine wetlands) and inland (also known as nontidal, freshwater, or palustrine wetlands). The Cowardin system is hierarchical and includes several layers of detail for wetland classification, such as a subsystem of water flow, classes of substrate types, subclasses of vegetation types and dominant species, and flooding regimes and salinity levels for each system. This system is appropriate for an ecologically based understanding of wetland definition. Following the Cowardin classification system, the water resources that could occur along the San Francisco to San Jose Corridor include estuarine, lacustrine, palustrine, and riverine systems. Vernal pools may be present, particularly on clear lake soils fringing San Francisco Bay.

#### **Special-Status Species**

##### *Special-Status Plants*

A number of special-status plant species could be present in the San Francisco to San Jose corridor. These include the San Mateo thorn-mint, Franciscan onion, bent-flowered fiddleneck, marsh sandwort, alkali milk-vetch, San Joaquin spearscale, Tiburon Indian paintbrush, Congdon's tarplant, Presidio clarkia, San Francisco collinsia, Santa Clara Valley dudleya, Hoover's button-celery, San Francisco gumplant, Marin western flax, Contra Costa goldfields, Crystal Springs lessingia, marsh microseris, white-rayed pentachaeta, slender-leaved pondweed, adobe sanicle, San Francisco campion, Santa Cruz microseris, saline clover, and San Francisco owl's-clover.

##### *Special-Status Wildlife*

A number of special-status wildlife species could be present in the San Francisco to San Jose corridor. These include bay checkerspot butterfly, callippe silverspot, mission blue butterfly, San Bruno elfin butterfly, California red-legged frog, California horned lizard, northwestern pond turtle, San Francisco garter snake; nesting habitat for Alameda song sparrow, brown pelican, California black rail, California clapper rail, California least tern, Cooper's hawk, double-crested cormorant, loggerhead shrike, long-eared owl, northern harrier, salt marsh common yellowthroat, short-eared owl, western burrowing owl, white-tailed kite, and yellow warbler; and salt marsh harvest mouse, salt marsh wandering shrew, San Francisco dusky-footed woodrat, and several species of bats.

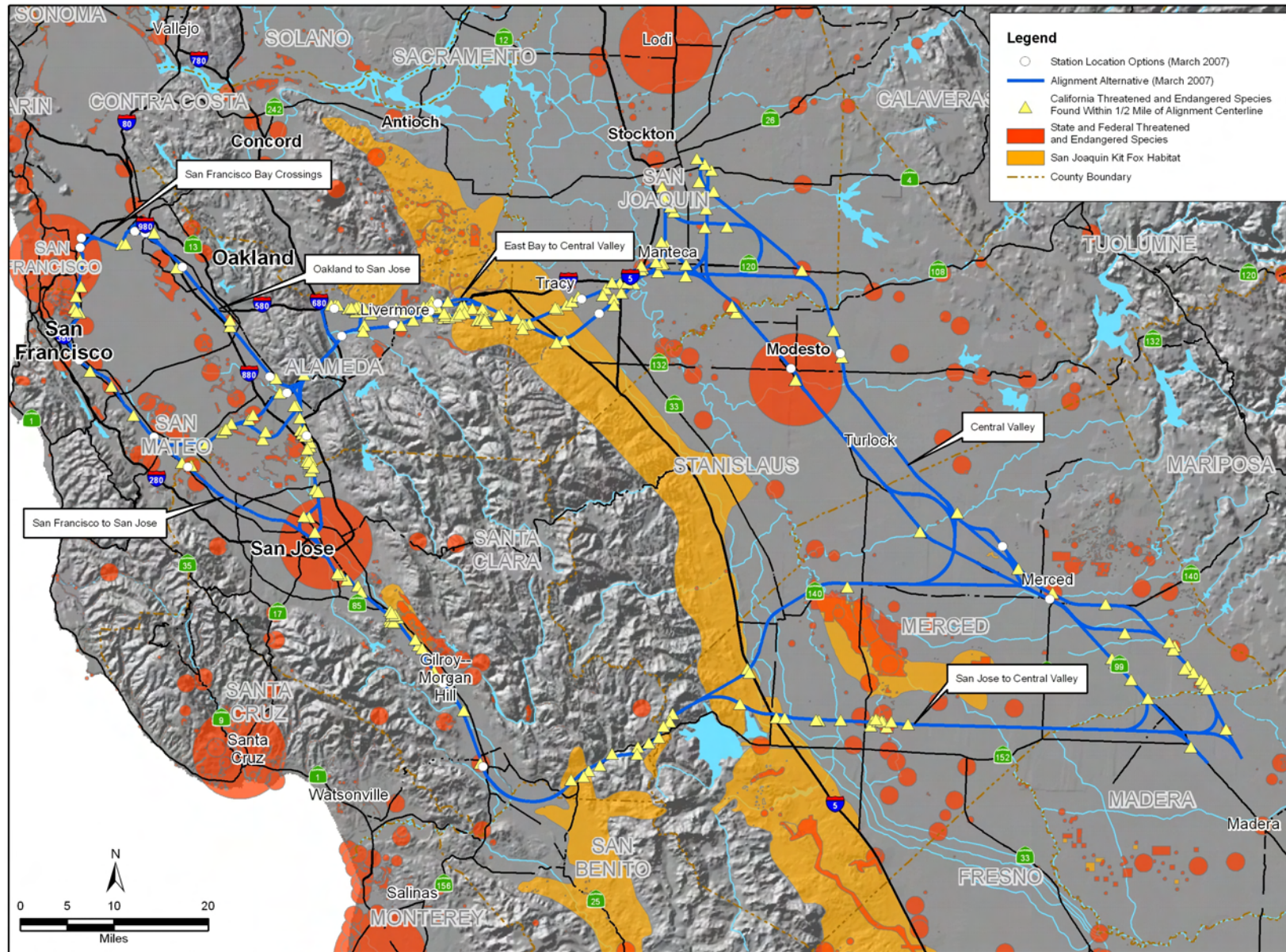
#### **Wildlife Movement Corridors**

The majority of the corridor is urbanized, and available data are limited on wildlife movement/migration corridors in this area. The riparian and stream corridors between the Santa Cruz Mountains and the San Francisco Bay provide corridors for wildlife movement. The western shore of the San Francisco Bay provides a critical movement corridor for nesting and foraging birds and other wildlife. The Wilderness Coalition has identified this as a critical linkage corridor (2000) (Figure 3.15-3).

#### **Management Plans**

The USFWS has prepared the *San Bruno Elfin and Mission Blue Butterflies Recovery Plan* (1984). An HCP has been developed to allow development on San Bruno Mountain, while minimizing adverse





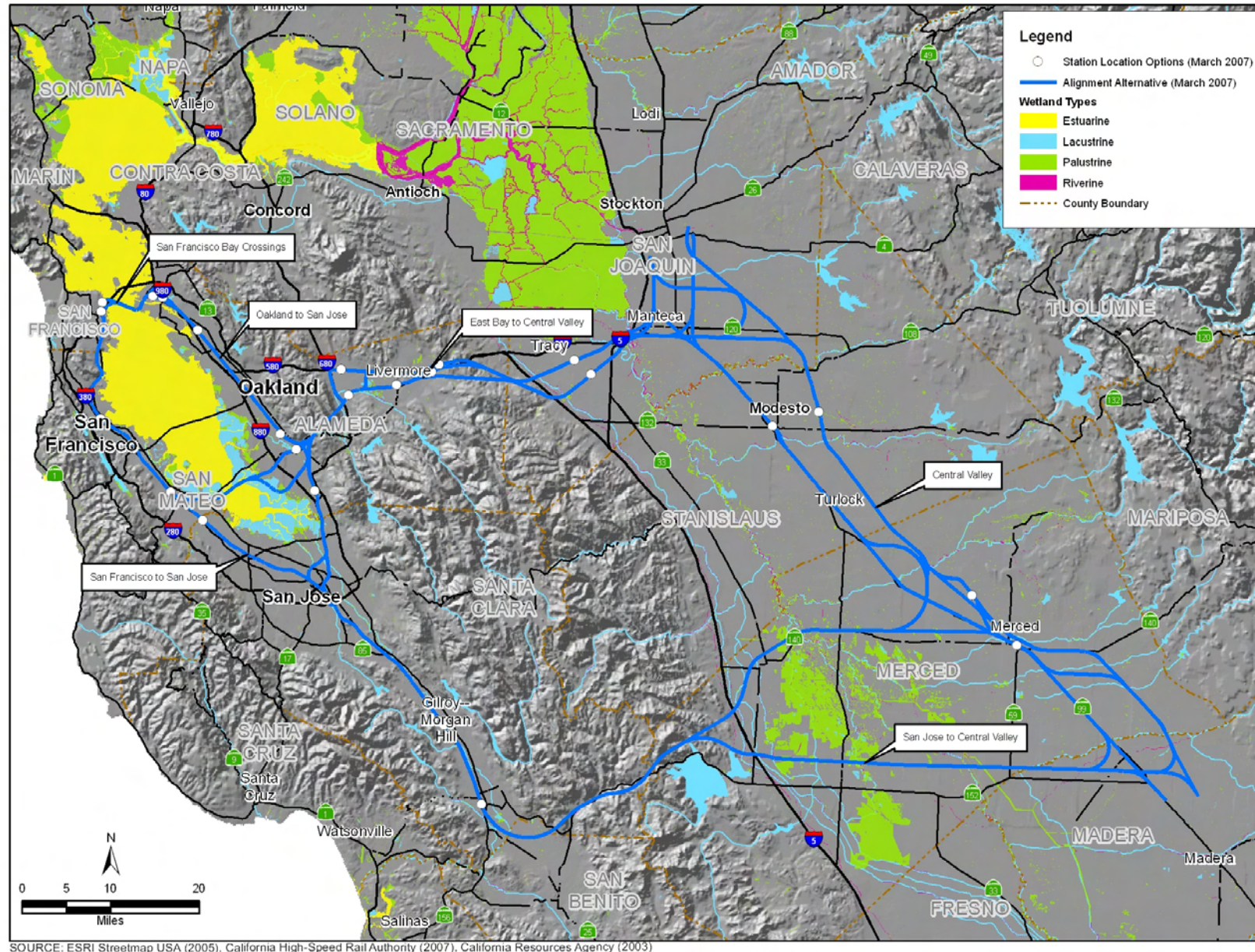
SOURCE: ESRI Streetmap USA (2005), California Department of Fish and Game, California Natural Diversity Database (2006), California High-Speed Rail Authority (2007)



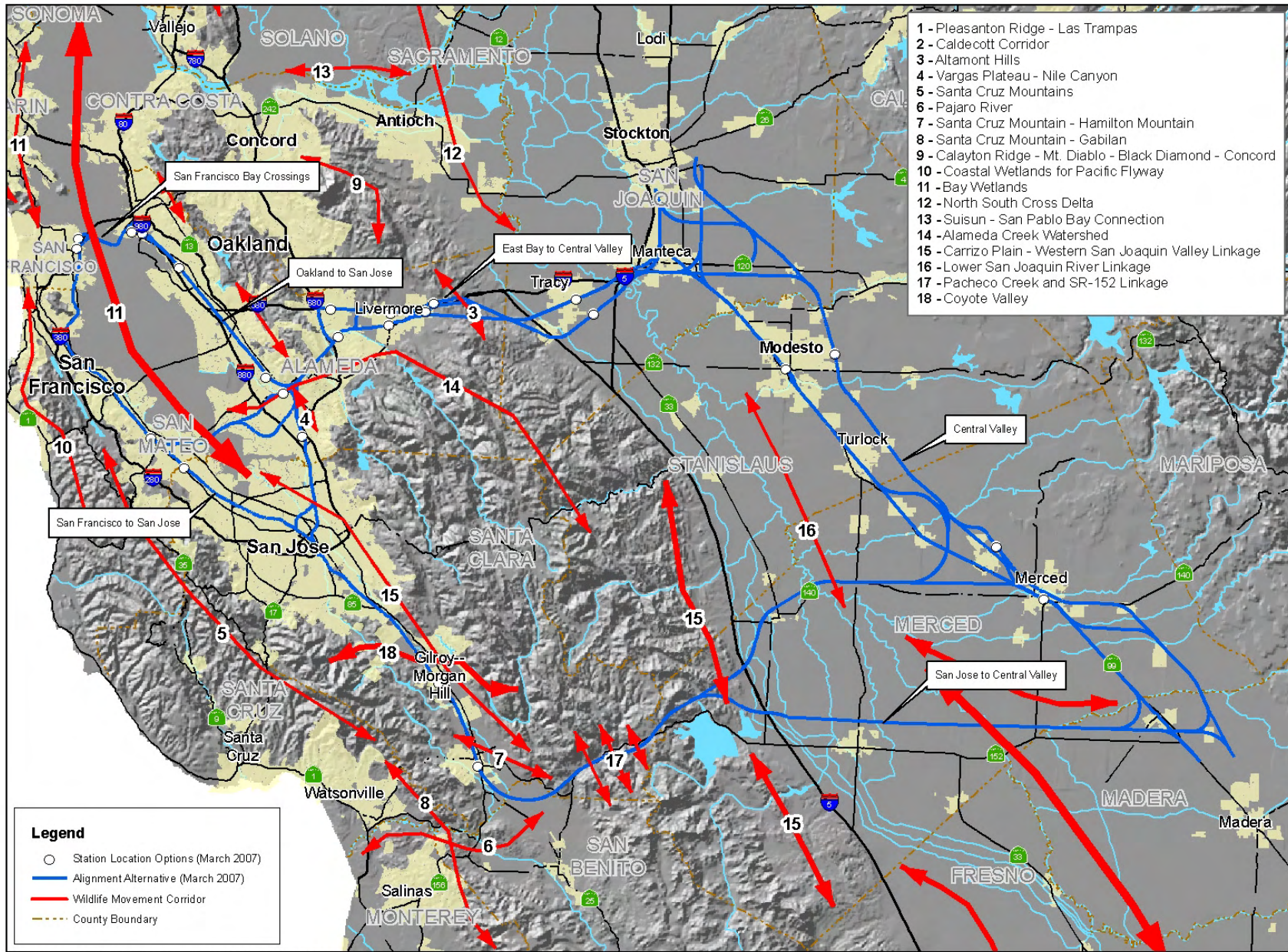
U.S. Department  
of Transportation  
Federal Railroad  
Administration

Figure 3.15-1  
Bay Area to Central Valley Habitat









SOURCE: ESRI Streetmap USA (2005), California High-Speed Rail Authority (2007)



U.S. Department  
of Transportation  
Federal Railroad  
Administration

**Figure 3.15-3**  
**Bay Area to Central Valley**  
**Wildlife Movement Corridors**



effects on the San Bruno elfin butterfly and other rare species in the area. The USFWS is developing a recovery plan for the Callippe silverspot butterfly. The Bay checkerspot butterfly, fountain thistle, Metcalf Canyon jewelflower, presidio clarkia, and white-rayed pentachaeta were included in the *Recovery Plan for Serpentine Soil Species of the San Francisco Bay Area*.

The USFWS has prepared the *Recovery Plan for the California Red-Legged Frog* (2002). The objective of the plan is to reduce threats to California red-legged frogs and to improve the population status sufficient to warrant delisting. The USFWS has identified several core areas where recovery plans will be focused. The core areas are distributed throughout the historical and current range of the California red-legged frog and represent a system of areas that, when protected and managed, will allow for long-term viability of existing populations and reestablishment of populations in the historical range.

The Tidal Marsh Ecosystem Recovery Plan, which is under development by USFWS, will include a number of federally listed species found in the San Francisco Bay, such as Suisun thistle, soft birds-beak, California clapper rail, and salt marsh harvest mouse. The plan is expected to outline strategies for the recovery of these species.

A *Recovery Plan for the San Francisco Garter Snake* (1985) was developed by the USFWS and is being updated.

The USFWS is preparing the Recovery Plan for Coastal Plants. The showy Indian clover is listed in this recovery plan.

A restoration plan, as part of the South Bay Salt Pond Restoration Project, is being developed by the California Coastal Conservancy, USFWS, and CDFG for the Cargill salt properties (South Bay Salt Pond Restoration Project) to restore salt marshes, as well as to provide public access and public recreation.

#### Oakland to San Jose Corridor

The Oakland to San Jose corridor includes the eastern portion of the San Francisco Bay Area from Oakland in Alameda County south through Fremont and Milpitas to San Jose. The San Francisco Bay, the Santa Clara Valley, and the Diablo Range geophysical features dominate the areas traversed by this corridor. The major watersheds that correspond to these geophysical features are the San Francisco Bay watershed, including the Guadalupe River and Coyote Creek. Elevation along the proposed HST Alignment Alternatives in this region ranges from sea level to around 200 ft (61 m).

#### **Vegetation Communities**

Vegetation communities in this corridor include seasonal wetland, agriculture, open water, urban/developed, riparian habitat, grasslands, shrubland, Montane hardwood forest, managed Bay marsh, saline-brackish permanent wetland, and unvegetated flats.

#### **Water Resources**

Following the Cowardin classification system, the water resources that could occur in the Oakland to San Jose corridor include estuarine, lacustrine, palustrine, and riverine systems. Vernal pools may be present, especially on Clear Lake soils fringing San Francisco Bay.

#### **Special-Status Species**

##### *Special-Status Plants*

A number of special-status plant species could occur in the Oakland to San Jose corridor. These include the bent-flowered fiddleneck, alkali milk-vetch, brittlescale, San Joaquin spearscale, big-scale balsamroot, Tiburon Indian paintbrush, Congdon's tarplant, Presidio clarkia, Hoover's button-celery, Contra Costa goldfields, prostrate navarretia, hairless popcorn flower, slender-leaved pondweed, adobe sanicle, and saline clover.



*Special-Status Wildlife*

A number of special-status wildlife species could occur in the Oakland to San Jose corridor. These include vernal pool tadpole shrimp, California red-legged frog, California horned lizard; northwestern pond turtle; nesting Alameda song sparrow, California black rail, California clapper rail, California least tern, Cooper's hawk, double-crested cormorant, loggerhead shrike, long-eared owl, northern harrier, salt marsh common yellowthroat, short-eared owl, western burrowing owl, white-tailed kite, and yellow warbler; and salt marsh harvest mouse, salt marsh wandering shrew, San Francisco dusky-footed woodrat, and several species of bats.

**Special Management Areas**

The 30,000-ac (12,140-ha) Don Edwards San Francisco Bay National Wildlife Refuge is the largest urban wildlife refuge in the nation. The refuge is located on the southeast side of the San Francisco Bay and preserves open bay, salt marsh, mud flats, vernal pools, and upland habitats. It is home to millions of shorebirds and waterfowl, with a total of 250 bird species, including the endangered California clapper rail, California least tern, and salt marsh harvest mouse.

**Wildlife Movement Corridors**

The riparian and stream corridors between the Diablo Range and the San Francisco Bay provide corridors for wildlife movement. The eastern shore of the San Francisco Bay provides movement corridors for small mammals, such as the salt marsh harvest mouse, as well as nesting and foraging birds. The Wilderness Coalition (2000) identified critical linkage corridors along the eastern shore of San Francisco, as well as a corridor linking the bay to the Diablo Range (Figure 3.15-3).

**Management Plans**

The restoration plan for the Cargill salt properties would be relevant to this corridor. Also, the Presidio clarkia was included in the *Recovery Plan for Serpentine Soil Species of the San Francisco Bay Area*.

San Jose to Central Valley Corridor

The San Jose to Central Valley corridor includes the Santa Clara Valley from San Jose south through Morgan Hill and Gilroy, and east through the Coast Range into the Central Valley. The major geophysical regions include the Santa Clara Valley, the southern reaches of the Diablo Range, and the Central Valley. The major watersheds include the San Francisco Bay watershed, including the Guadalupe River and Coyote Creek, the Pajaro River watershed, and the San Joaquin River watershed. Elevation along the San Jose to Central Valley corridor ranges from 150 ft (46 m) to 1,200 ft (366 m).

**Vegetation Communities**

Vegetation communities in this corridor include seasonal wetland, agriculture, open water, urban/developed, riparian forest, nonnative annual grasslands, shrubland, Montane hardwood forest, oak woodland/foothill pine, and permanent freshwater wetland.

**Water Resources**

Following the Cowardin classification system, the water resources that could occur along the San Jose to the Central Valley corridor include lacustrine, palustrine, and riverine systems. Vernal pools may be present, especially on Central Valley terrace deposits.

**Special-Status Species***Special-Status Plants*

A number of special-status plant species could occur in the San Jose to Central Valley corridor. These include the bent-flowered fiddleneck, alkali milk-vetch, heartscale, brittlescale, San Joaquin spearscale, lesser saltscale, vernal pool smallscale, subtle orache, Tiburon Indian paintbrush, pink creamsacs, Lemmon's jewelflower, coyote ceanothus, Congdon's tarplant, Hoover's spurge, robust spineflower, San Francisco collinsia, hispid bird's-beak, Hoover's cryptantha, Hospital Canyon

larkspur, recurved larkspur, dwarf downingia, Santa Clara Valley dudleya, four-angled spikerush, round-leaved filaree, Delta button-celery, fragrant fritillary, Diablo helianthella, Loma Prieta hoita, Contra Costa goldfields, smooth lessingia, arcuate bush mallow, robust monardella, shining navarretia, Colusa grass, San Joaquin Valley orcutt grass, hairy orcutt grass, Metcalf Canyon jewel-flower, most beautiful jewel-flower, showy Indian clover, saline clover, and caper-fruited tropidocarpum.

#### *Special-Status Wildlife*

A number of special-status wildlife species could occur in the San Jose to Central Valley corridor. These include the bay checkerspot butterfly, conservancy fairy shrimp, longhorn fairy shrimp, valley elderberry longhorn beetle, vernal pool fairy shrimp, vernal pool tadpole shrimp, California red-legged frog, California tiger salamander, foothill yellow-legged frog, California horned lizard, giant garter snake, San Joaquin whipsnake, southwestern pond turtle; nesting habitat for American peregrine falcon, California horned lark, Cooper's hawk, golden eagle, least Bell's vireo, loggerhead shrike, long-eared owl, northern harrier, prairie falcon, short-eared owl, Swainson's hawk, tricolored blackbird, western burrowing owl, white-tailed kite, willow flycatcher, yellow-breasted chat, and yellow warbler; and American badger, San Joaquin kit fox, and bat species.

#### **Special Management Areas**

The Grasslands Ecological Area (GEA), which is located north, east, and south of the city of Los Banos in Merced County, encompasses approximately 240,000 ac (97,125 ha) and is the largest wetland complex in California. It also contains the largest block of contiguous wetlands remaining in the Central Valley.<sup>4</sup> The GEA is a non-jurisdictional, non-regulatory, generally designated area used by the USFWS to identify an area for priority purchase of public easements for wetland preservation and enhancement. The boundary of the GEA encompasses a substantial area that includes two federal wildlife refuges, a state park, state wildlife management areas, and a block of privately managed wetlands. Lands in the GEA managed by public agencies include the Great Valley Grasslands State Park; CDFG North Grasslands Wildlife Area, Los Banos Wildlife Area, and Volta Wildlife Area; and the San Luis National Wildlife Refuge Complex, which includes the San Luis National Wildlife Refuge (includes the Kesterson unit) and Merced National Wildlife Refuge. Also in the GEA are numerous privately owned parcels and a large number of waterfowl hunting clubs. Activities and land uses in the GEA include hunting, fishing and other active and passive recreation, agriculture, and residential and associated land uses. The GEA was designated a wetlands of worldwide importance under the Ramsar Treaty in 2005, one of four sites in California.<sup>5</sup> This region is considered a critical component of the Central Valley wintering habitat for waterfowl and has been recognized as a resource of international significance. The USFWS manages the San Luis National Wildlife Refuge Complex to optimize wetland conditions for thousands of migratory birds that migrate through the Central Valley.

Within the area identified as the GEA is the USFWS Grasslands Wildlife Management Area (WMA), which was established to protect wetlands. Land in the WMA is privately owned and some is protected by conservation easements. The size of this management area as of the last expansion in 2005 is approximately 133,000 acres, with more than 70,000 acres protected through conservation agreements. Daily management of the easement area remains under private landowner control, the majority of the properties being managed for waterfowl hunting, cattle grazing, and agriculture.

<sup>4</sup> Grasslands Water District, Land Use and Economics Study: Grasslands Ecological Area (July 2001), P. 2 (hereafter "Grassland Water District"). The area of the GEA increased from 180,000 ac to 240,000 ac to include the eastward expansion approved by USFWS between the publication of the Draft Program EIR/EIS and the Final Program EIR/EIS.

<sup>5</sup> RAMSAR Report for the Grassland Ecological Area. Accessed at <http://www.wetlands.org/reports/output.cfm>. 2005.



Henry Coe State Park, which is located northeast of Gilroy, is the largest state park in northern California, encompassing more than 87,000 ac (35,208 ha) and includes the 23,300-ac (9,429-ha) Orestimba Wilderness area. Henry Coe State Park is home to a variety of special-status species and wildlife, including an estimated 675 vascular plants. Other state owned or managed lands within this corridor include the Cañada De Los Osos Ecological Reserve south of Henry Coe State Park, and the San Luis Reservoir State Recreation Area, O'Neill Forebay Wildlife Area, Upper and Lower Cottonwood Creek Wildlife Area, San Luis Reservoir Wildlife Area, and Pacheco State Park located around the San Luis Reservoir.

The Nature Conservancy is pursuing conservation measures to protect more than 780 square mi (2,020 square km) of land in the Diablo Range to safeguard native species and natural habitats. This project was started in 1998 with the largest single private conservation project in northern California history—involving two ranches east of Mount Hamilton totaling 61,000 ac (24,686 ha). The Nature Conservancy's goal is to protect some 200,000 ac (80,937 ha) by 2007. This area would protect the San Joaquin kit fox, the California red-legged frog, valley oak savannas, blue oak woodlands, and native fish and amphibians.

#### **Wildlife Movement Corridors**

The natural and agricultural lands located within the Santa Clara Valley provide a movement corridor from the San Francisco Bay Area to natural areas to the south. The Diablo Range provides movement corridors for a number of species between the Santa Clara Valley and the Central Valley. Major drainages, such as Coyote Creek, the Pajaro River, and the Tres Pinos Creek, also provide wildlife movement corridors. On the west side of the Central Valley is a relatively extensive strip of annual (nonnative) grassland that lies between the irrigated fields and orchards of the valley floor and the oak and pine woodlands of the Diablo Range. This strip is about 10 mi (16 km) wide and provides a movement corridor for the San Joaquin kit fox.

#### **Management Plans**

The USFWS adopted the *Recovery Plan for Upland Species of the San Joaquin Valley* in 1998. The recovery plan was developed to delineate reasonable actions that would be required to recover and protect listed species found in the San Joaquin Valley. The plan covers 34 species of plants and animal, 11 of which are federally listed species: six plant species and five wildlife species. The remaining 23 species are either candidate species or species of special concern. The ultimate goal of the recovery plan is to delist the 11 listed species and ensure the long-term conservation of the 23 candidate and species of special concern. The California jewelflower has been included in this management plan.

A draft recovery plan has been developed for the least Bell's vireo, which outlines measures to help in the recovery of the species.

The USFWS developed the *Valley Elderberry Longhorn Beetle Recovery Plan* in 1984. The USFWS has also adopted *Conservation Guidelines for Valley Elderberry Longhorn Beetle* (1999).

The USFWS prepared the *Recovery Plan for Vernal Pool Ecosystems in California* (2005), which outlines strategies for the recovery and conservation of vernal pools and the federally listed plant and wildlife species that occur in these ecosystems. The USFWS identified vernal pool regions throughout California that are based on the geography and/or ecology of one or more of the vernal pool species identified in the recovery plan. Within each of the regions, core areas were identified where recovery actions will be focused because they provide the necessary features that are important to the recovery of a species. The hairy orcutt grass, Hoover's spurge, San Joaquin Valley orcutt grass, Colusa grass, and succulent owl's clover have all been listed under this management plan.

The *Recovery Plan for Serpentine Soil Species of the San Francisco Bay Area* would be relevant to this corridor. The coyote ceanothus, Metcalf Canyon jewelflower, and Santa Clara Valley dudleya have been listed under this management plan.

The *Recovery Plan for Coastal Plants* that the USFWS is preparing would be relevant for this corridor. The showy Indian clover is listed under this management plan.

#### East Bay to Central Valley Corridor

The East Bay to Central Valley corridor includes the East San Francisco Bay near Union City (Alameda County) east to the Livermore Valley (Pleasanton and Livermore), and across Patterson Pass into the Central Valley. The dominant geophysical features traversed by this corridor include the San Francisco Bay, the Diablo Range, and the Central Valley. Major watersheds include the San Francisco Bay watershed, the Las Positas watershed, and the San Joaquin River watershed. Elevation along the East Bay to Central Valley Corridor ranges from 100 ft (30 m) to 1,300 ft (396 m).

#### **Vegetation Communities**

Vegetation communities in this corridor include seasonal wetland, agriculture, open water, urban/developed, riparian habitat, grasslands, shrubland, oak woodland/foothill pine, and permanent freshwater wetland.

#### **Water Resources**

Following the Cowardin classification system, the water resources that could occur along the East Bay to the Central Valley corridor include estuarine, lacustrine, palustrine, and riverine systems. Vernal pools may be present, especially on Clear Lake soils fringing San Francisco Bay, or on Central Valley terrace deposits.

#### **Special-Status Species**

##### *Special-Status Plants*

A number of special-status plant species could occur in the East Bay to Central Valley corridor. These include the bent-flowered fiddleneck, Suisun Marsh aster, alkali milk-vetch, heartscale, brittlescale, San Joaquin spearscale, lesser saltscale, big-scale balsamroot, *big tarplant*, Congdon's tarplant, slough thistle, Mt. Hamilton thistle, hispid bird's-beak, palmate-bracted bird's beak, Hospital Canyon larkspur, recurved larkspur, round-leaved filaree, Hoover's button-celery, Delta button-celery, diamond-petaled California poppy, Diablo helianthella, rose-mallow, Contra Costa goldfields, legene, showy madia, robust monardella, prostrate navarretia, hairless popcorn flower, most beautiful jewel-flower, saline clover, caper-fruited tropidocarpum, and Greene's tuctoria.

##### *Special-Status Wildlife*

A number of special-status wildlife species could occur in the East Bay to Central Valley corridor. These include the longhorn fairy shrimp, valley elderberry longhorn beetle, vernal pool fairy shrimp; vernal pool tadpole shrimp, California red-legged frog, California tiger salamander, western spadefoot, Alameda whipsnake, California horned lizard, giant garter snake, northwestern pond turtle, San Joaquin whipsnake; nesting habitat for American peregrine falcon, California horned lark, Cooper's hawk, golden eagle, loggerhead shrike, long-eared owl, northern harrier, prairie falcon, short-eared owl, Swainson's hawk, tricolored blackbird, western burrowing owl, white-tailed kite, and yellow warbler; and American badger, San Joaquin kit fox, and several bat species.

#### **Special Management Areas**

The Mount Hamilton Project of The Nature Conservancy encompasses a 1,560-sq-mi (2,511-sq-km) area in this region that extends from south of the Pacheco Pass to north of the Altamont Pass, with large parts of the area protected by conservation easements. The East Bay Regional Park District (EBRPD) encompasses 98,000 ac (39,659 ha) of mostly undeveloped, natural, open space parklands in Alameda and Contra Costa Counties. EBRPD lands include grassland, shrubland, woodland, forest,

lake, shoreline, riparian, and wetland environments, which provide habitat for plants and wildlife. The EACCS provide a blueprint for conservation in East Alameda County and streamline the environmental permitting process by providing guidance to project proponents on where and how to focus mitigation efforts to address potential adverse effects on species resulting from future development and infrastructure improvements. The EACCS facilitate ongoing conservation programs by providing a coordinated approach supported by local stakeholders and regulatory agencies.

#### **Wildlife Movement Corridors**

On the west side of the Central Valley is a relatively extensive strip of annual (nonnative) grassland that lies between the irrigated fields and orchards of the valley floor and the oak and pine woodlands of the Diablo Range. This strip is about 10 mi (16 km) wide and provides a movement corridor for the San Joaquin kit fox.

#### **Management Plans**

The San Francisco Public Utility Commission (SFPUC) is developing the *Alameda Watershed Habitat Conservation Plan* to ensure that its operation activities comply with the ESA. The plan covers 47,800 ac (19,344 ha) in Alameda County, including the entire 36,816 ac (14,898 ha) of land owned by the SFPUC.

San Joaquin County has developed the *San Joaquin County Multi-Species Habitat Conservation Plan*. The purpose of the plan is to provide a strategy to balance for the long-term management of plant, fish, and wildlife species, especially those that are state or federally listed, and the need to accommodate for controlled development.

The USFWS has developed the *Draft Recovery Plan for Chaparral and Scrub Community Species East of San Francisco Bay, California* (2002). Species covered under this recovery plan include the Alameda whipsnake and Berkeley kangaroo rat.

The *Recovery Plan for Upland Species of the San Joaquin Valley* would be relevant to this corridor. The palmate-bracted bird's-beak is listed under this management plan.

The *Valley Elderberry Longhorn Beetle Recovery Plan and Conservation Guidelines for Valley Elderberry Longhorn Beetle* would be relevant to this alignment.

#### **San Francisco Bay Crossings**

##### **Existing Conditions**

The San Francisco Bay Crossings include the San Francisco Bay Area from San Francisco east to Oakland and the San Francisco Bay Area from North Fair Oaks (San Mateo County) east to Union City. The major geophysical feature traversed is the San Francisco Bay and the major watershed is the San Francisco Bay watershed. Elevation ranges from sea level to 50 ft (15 m).

##### **Vegetation Communities**

Vegetation communities related to the Bay crossings include seasonal wetland, agriculture, open water, urban/developed, saline-brackish permanent wetland, nonnative grasslands, shrubland, oak woodland/foothill pine, Montane hardwood forest, salt pond, managed Bay marsh, and unvegetated flats.

##### **Water Resources**

Following the Cowardin classification system, the water resources that could occur along the San Francisco Bay Crossing corridor include estuarine and palustrine systems. Vernal pools may be present, especially on Clear Lake soils fringing San Francisco Bay.

**Special-Status Species***Special-Status Plants*

A number of special-status plant species could occur in the area of the San Francisco Bay Crossings. These include the San Mateo thorn-mint, Franciscan onion, bent-flowered fiddleneck, coastal marsh milk-vetch, alkali milk-vetch, brittlescale, San Joaquin spearscale, big-scale balsamroot, Congdon's tarplant, Presidio clarkia, San Francisco collinsia, Point Reyes bird's-beak, Hoover's button-celery, San Francisco gumplant, Marin western flax, Contra Costa goldfields, Crystal Springs lessingia, Prostrate navarretia, white-rayed pentachaeta, Adobe sanicle, California seablite, saline clover, and San Francisco owl's-clover.

*Special-Status Wildlife*

A number of special-status wildlife species could occur in the area of the San Francisco Bay Crossings. These include northwestern pond turtle; nesting habitat for Alameda song sparrow, brown pelican, California black rail, California clapper rail, California least tern, Cooper's hawk, double-crested cormorant, long-eared owl, loggerhead shrike, northern harrier, saltmarsh common yellowthroat, short-eared owl, western burrowing owl, white-tailed kite, and yellow warbler; and salt marsh harvest mouse, salt marsh wandering shrew, San Francisco dusky-footed woodrat, and several bat species.

**Special Management Areas**

The South Bay Salt Pond Restoration Project is a 25-sq-mi (65-sq-km) project to restore the wetlands from the San Mateo Bridge to the southern edge of the Bay. The California Coastal Conservancy, USFWS, and CDFG initiated this project in 2003. The EBRPD encompasses 98,000 ac (39,659 ha) of mostly undeveloped, natural, open space parklands in Alameda and Contra Costa Counties. EBRPD lands include grassland, shrubland, woodland, forest, lake, shoreline, riparian, and wetland environments, which provide habitat for plants and wildlife.

The Don Edwards San Francisco Bay National Wildlife Refuge is located on the southern reaches of the San Francisco Bay. The refuge is 30,000 ac (12,140 ha) of open bay, salt marsh, mud flats, vernal pools, and upland habitats.

**Wildlife Movement Corridors**

The San Francisco Bay Area provides a migration corridor for a many species of birds and aquatic species, such as Pacific herring, steelhead, Coho salmon, and Chinook salmon.

**Management Plans**

The restoration plan for the Cargill salt properties would be relevant to the crossings. Also, the *Recovery Plan for Serpentine Soil Species of the San Francisco Bay Area* (1998) would be relevant to this corridor. The Presidio clarkia, fountain thistle, San Mateo woolly sunflower, and white-rayed pentachaeta are listed under this management plan.

Central Valley Corridor

The Central Valley corridor includes the Central Valley from Chowchilla (Madera County) and Merced (Merced County) north through Modesto (Stanislaus County) to Stockton (San Joaquin County). The major geophysical feature traversed by this corridor is the Central Valley. The major watershed traversed by this corridor is the San Joaquin River watershed. Elevation range for the Central Valley alternative ranges from 30 ft (9 m) to 250 ft to (76 m).

**Vegetation Communities**

Vegetation communities in this corridor include seasonal wetland, agriculture, open water, urban/developed, riparian habitat, grasslands, shrubland, oak woodland/foothill pine, Montane hardwood forest, Valley oak woodland, and permanent freshwater wetland.

### Water Resources

Following the Cowardin classification system, the water resources that could occur along the Central Valley corridor include lacustrine, palustrine, and riverine systems. Vernal pools may be present, especially on Central Valley terrace deposits.

### Special-Status Species

#### *Special-Status Plants*

A number of special-status plant species could occur in the Central Valley corridor. These include the alkali milk-vetch, heartscale, brittlescale, San Joaquin spearscale, lesser saltscale, vernal pool smallscale, subtle orache, *big tarplant*, Hoover's spurge, hispid bird's-beak, palmate-bracted bird's beak, Hoover's cryptantha, recurved larkspur, dwarf downingia, four-angled spikerush, round-leaved filaree, Delta button-celery, Boggs Lake hedge-hyssop, legenere, shining navarretia, prostrate navarretia, Colusa grass, San Joaquin Valley orcutt grass, hairy orcutt grass, and caper-fruited tropidocarpum.

#### *Special-Status Wildlife*

A number of special-status wildlife species could occur in the Central Valley corridor. These include the conservancy fairy shrimp, valley elderberry longhorn beetle, vernal pool fairy shrimp, vernal pool tadpole shrimp, California tiger salamander, giant garter snake, southwestern pond turtle; nesting habitat for California horned lark, Cooper's hawk, loggerhead shrike, northern harrier, short-eared owl, Swainson's hawk, tricolored blackbird, western burrowing owl, and white-tailed kite; and American badger, riparian brush rabbit, riparian woodrat, San Joaquin kit fox, and several bat species.

### Wildlife Movement Corridors

The San Joaquin River and its tributaries provide wildlife movement corridors in the Central Valley. The natural and agricultural areas along the eastern side of the Central Valley provide a movement corridor. The USFWS has identified areas where linkage corridors should be established through the acquisition and management of conservation easements, incentive programs to preserve suitable habitat, zoning, acquisition, and other mechanisms to prevent isolation of natural habitats (U.S. Fish and Wildlife Service 1998). These linkage corridors would connect the remaining habitat on the valley floor with habitat in the foothills surrounding the San Joaquin Valley. One such identified linkage corridor is in the vicinity of Sandy Mush Road in Merced County. This linkage corridor would connect the national wildlife refuges and state wildlife areas located in the GSA in Merced County with the northeastern edges of the San Joaquin Valley and with natural areas farther south in Madera and Fresno Counties. In conjunction with the linkage corridor, the USFWS has identified the natural lands and compatible farmlands in eastern Merced County as areas that should be maintained and preserved for San Joaquin kit fox dispersal habitat. These areas encompass a variety of habitats, including grasslands, vernal pool systems, wetlands, oak woodlands, and farmlands.

### Management Plans

The *Recovery Plan for Upland Species of the San Joaquin Valley* would be relevant to this corridor. The California jewelflower and palmate-bracted bird's beak are included in this management plan.

The *Recovery Plan for Vernal Pool Ecosystems in California* (2005) would be relevant to this corridor. Hairy orcutt grass, Hoover's spurge, San Joaquin Valley orcutt grass, succulent owl's-clover, and Colusa grass have been included in this management plan.

The *San Joaquin County Multi-Species Habitat Conservation Plan* and the *Valley Elderberry Longhorn Beetle Recovery Plan and Conservation Guidelines for Valley Elderberry Longhorn Beetle* would be relevant to this corridor.

The University of California, Merced, is in the process of developing a management plan to conserve habitat for special-status plant and animal species, while allowing for the development of the



university and supporting community. Covered species include succulent owl's clover, Hoover's spurge, Colusa grass, San Joaquin orcutt grass, hairy orcutt grass, Hartweg's golden sunburst, green tuctoria, conservancy fairy shrimp, vernal pool fairy shrimp, vernal pool tadpole shrimp, midvalley fairy shrimp, California tiger salamander, and San Joaquin kit fox.

### 3.15.3 Environmental Consequences

#### A. NO PROJECT ALTERNATIVE

The No Project Alternative assumes that, in addition to existing conditions, additional transportation improvements would be developed. The transportation improvements include projects that are programmed or funded to 2030 (as described in Chapter 2).

It was not possible as part of this study to identify or quantify the impacts on biological resources that would occur as a result of the transportation improvements in the No Project Alternative. For existing transportation facilities to be improved, impacts on biological resources have previously been addressed, and only small additional or increased impacts are expected from the future transportation improvement included in the No Project Alternative. In some cases, widening of existing corridors or similar improvements could result in additional impacts on biological resources.

#### B. HIGH-SPEED TRAIN ALIGNMENT ALTERNATIVES

The proposed HST system would generally be located in or adjacent to existing transportation rights-of-way, such as highways or railroads, or would be in tunnels or elevated through mountain passes and sensitive habitat areas. HST Alignment Alternatives would include tunnels, which could avoid or substantially reduce surface impacts on sensitive biological resources, except at tunnel portal areas. Bridges across water bodies would use materials and designs to minimize the number of piles/columns in the water.

The potential impacts on biological resources and water resources/wetlands that could result from the HST Alignment Alternatives and station location options are summarized in Table 3.15-1. For more detail related to impacts of each alignment alternative segment see Appendix 3.15.

As discussed earlier, all comparisons are based on information available from existing databases. Field surveys, which would be performed during a subsequent environmental review, would provide more detailed information and could indicate an increase or a decrease in the potential impacts on biological resources from a proposed HST system, particularly along alignment alternatives that have not previously been the focus of field surveys or mapping by any of the regulatory agencies (such as CDFG or USFWS).

The discussion of impacts for the alignment alternatives is structured in the following manner: (1) impacts on sensitive vegetation communities/habitats; (2) impacts on special-status species, including marine/anadromous species; (3) impacts on wildlife movement corridors; (3) impacts on wetlands and non-wetland waters; and (4) conflicts with conservation plans or special management plans.

Figure 3.15-1 illustrates the potential locations of special-status species in relation to the HST Alignment Alternatives. Sensitive vegetation communities and those species that are federally or state listed as threatened or endangered would be of special concern because of the protection afforded them under the ESA and CESA. Additionally, species with limited habitats or ranges, such as aquatic species and butterfly species, would also be of special concern because of the adverse effects that even small impacts on their habitat could cause. Several special-status species, including the California red-legged frog and San Joaquin kit fox, would also be affected. Sensitive vegetation communities include seasonal and permanent freshwater wetlands, saline-brackish permanent wetlands, permanent freshwater marsh, riparian, Bay waters, eelgrass habitat, and oak woodlands.

Figure 3.15-2 illustrates the potential locations of non-jurisdictional waters and wetlands in relation to the HST Alignment Alternatives. The alignment alternatives would likely impact wetlands and waters at a level that would require an Individual Permit and Section 404(b)(1) Analysis of Alternatives, which would be addressed in a subsequent environmental review.

The HST Alignment Alternatives would have potential to affect wildlife movement/migration corridors throughout the study area. Figure 3.15-3 illustrates the known wildlife movement corridors throughout the study region and general areas where the movement corridors cross proposed HST alignment alternatives.

There are several HCPs and special management areas that would be affected by the HST Alignment Alternatives, including the Don Edwards National Wildlife Refuge along San Francisco Bay.

During construction, earthwork for the HST Alignment Alternatives would involve excavations and fill construction, producing potential erosion and sedimentation problems if not properly designed, constructed, and maintained. Stockpiles of excavated materials and imported fill, if properly managed, should not be sources of sedimentation. If, however, construction-related erosion and sedimentation were to occur, it could result in impacts on surface water quality and in potential impacts on biological resources. Dewatering operations for excavations could also result in discharge of sediments or pollutants to surface water bodies, thereby degrading water quality and affecting biological resources.

**Table 3.15-1. Biological Resource Summary Data Table for Alignments and Station Location Option Comparisons**

Corridor	Possible Alignments	Alignment Alternative	Number of Special-Status Plant Species	Number of Special-Status Wildlife Species	Wildlife Movement Corridor	Non-Wetland Waters in Linear Feet	Wetlands in Acres (Hectares)	Marine/Anadromous Fish Resources
San Francisco to San Jose: Caltrain	1 of 1	San Francisco to Dumbarton	19	29	West side of San Francisco Bay and riparian and stream corridors	590	0.08 (0.03)	Y
	1 of 1	Dumbarton to San Jose	5	19	Riparian and stream corridors	672	-	Y
<b>Station Location Options</b>								
Transbay Transit Center			1	-	West side of San Francisco Bay and riparian and stream corridors	-	-	N
4 <sup>th</sup> and King (Caltrain)			1	-	West side of San Francisco Bay and riparian and stream corridors	-	-	N
Millbrae/SFO			-	-	West side of San Francisco Bay and riparian and stream corridors	-	-	N
Redwood City (Caltrain)			-	-	West side of San Francisco Bay and riparian and stream corridors	-	-	N
Palo Alto (Caltrain)			-	1	Riparian and stream corridors	-	-	N

Corridor	Possible Alignments	Alignment Alternative	Number of Special-Status Plant Species	Number of Special-Status Wildlife Species	Wildlife Movement Corridor	Non-Wetland Waters in Linear Feet	Wetlands in Acres (Hectares)	Marine/Anadromous Fish Resources
Oakland to San Jose: Niles/I-880	1 of 2	West Oakland to Niles Junction	5	23	East side of San Francisco Bay and riparian and stream corridors	455	0.11 (0.04)	Y
		12 <sup>th</sup> Street/City Center to Niles Junction	6	23	East side of San Francisco Bay and riparian and stream corridors	455	0.11 (0.04)	Y
	1 of 2	Niles Junction to San Jose via Trimble	6	25	East side of San Francisco Bay and riparian and stream corridors	958	1.27 (0.51)	Y
		Niles Junction to San Jose via I-880	5	25	East side of San Francisco Bay and riparian and stream corridors	1,080	1.80 (0.73)	Y
Station Location Options								
West Oakland/7th Street			-	-	East side of San Francisco Bay and riparian and stream corridors	-	-	N
12th Street/City Center			-	-	East side of San Francisco Bay and riparian and stream corridors	-	-	N
Coliseum/Airport			-	-	East side of San Francisco Bay and riparian and stream corridors	482	0.64 (0.26)	Y
Union City (BART)			-	-	East side of San Francisco Bay and riparian and stream corridors	-	-	N

Corridor	Possible Alignments	Alignment Alternative	Number of Special-Status Plant Species	Number of Special-Status Wildlife Species	Wildlife Movement Corridor	Non-Wetland Waters in Linear Feet	Wetlands in Acres (Hectares)	Marine/ Anadromous Fish Resources
Fremont (Warm Springs)			-	-	East side of San Francisco Bay and riparian and stream corridors	-	-	N
San Jose to Central Valley: Pacheco Pass	1 of 1	Pacheco	23	27	Between Santa Clara Valley and San Joaquin Valley	1,960	0.11 (0.4)	Y
	1 of 3	Henry Miller (UPRR Connection)	25	34	Along west side of San Joaquin Valley and San Joaquin River	10,588	11.61 (4.7)	N
		Henry Miller (BNSF Connection)	25	34	Along west side of San Joaquin Valley and San Joaquin River	10,312	11.48 (4.65)	N
		GEA North	22	34	Along west side of San Joaquin Valley and San Joaquin River	6,771	17.96 (7.27)	Y
Station Location Options								
San Jose (Diridon)			1	1	Between Santa Clara Valley and San Joaquin Valley	-	-	N
Morgan Hill (Caltrain)			-	-	Between Santa Clara Valley and San Joaquin Valley	-	-	N
Gilroy (Caltrain)			1	-	Between Santa Clara Valley and San Joaquin Valley	-	-	N

Corridor	Possible Alignments	Alignment Alternative	Number of Special-Status Plant Species	Number of Special-Status Wildlife Species	Wildlife Movement Corridor	Non-Wetland Waters in Linear Feet	Wetlands in Acres (Hectares)	Marine/Anadromous Fish Resources
East Bay to Central Valley: Altamont Pass	1 of 4	I-680/ 580/UPRR	24	29	Along west side of San Joaquin Valley; riparian and stream corridors	2,380	0.66 (0.27)	Y
		I-580/ UPRR	24	29	Along west side of San Joaquin Valley; riparian and stream corridors	2,612	5.17 (2.1)	Y
		Patterson Pass/UPRR	20	28	Along west side of San Joaquin Valley; riparian and stream corridors	1,371	2.59 (1)	Y
		UPRR	20	28	Along west side of San Joaquin Valley; riparian and stream corridors	1,152	3.22 (1.3)	Y
	1 of 4	Tracy Downtown (BNSF Connection)	18	27	Along west side of San Joaquin Valley; riparian and stream corridors	6,291	4.36 (1.76)	Y
		Tracy ACE Station (BNSF Connection)	21	27	Along west side of San Joaquin Valley; riparian and stream corridors	7,678	3.63 (1.47)	Y
		Tracy ACE Station (UPRR Connection)	20	27	Along west side of San Joaquin Valley; riparian and stream corridors	5,326	2.60 (1)	Y
		Tracy Downtown (UPRR Connection)	22	27	Along west side of San Joaquin Valley; riparian and stream corridors	7,504	4.16 (1.68)	Y
	2 of 2	East Bay Connections	-	-	East side of San Francisco Bay and riparian and stream corridors	376	1.22 (0.49)	Y



Corridor	Possible Alignments	Alignment Alternative	Number of Special-Status Plant Species	Number of Special-Status Wildlife Species	Wildlife Movement Corridor	Non-Wetland Waters in Linear Feet	Wetlands in Acres (Hectares)	Marine/Anadromous Fish Resources
<b>Station Location Options</b>								
Pleasanton (I-680/Bernal Rd)			-	-	Along west side of San Joaquin Valley; riparian and stream corridors	-	-	N
Pleasanton (BART)			-	-	Along west side of San Joaquin Valley; riparian and stream corridors	338	-	N
Livermore (Downtown)			-	-	Along west side of San Joaquin Valley; riparian and stream corridors	-	-	N
Livermore (I-580)			-	-	Along west side of San Joaquin Valley; riparian and stream corridors	-	1.02 (0.41)	N
Livermore (Greenville Road/UPRR)			-	-	Along west side of San Joaquin Valley; riparian and stream corridors	-	-	N
Livermore (Greenville Road/I-580)			-	-	Along west side of San Joaquin Valley; riparian and stream corridors	72	1.07 (0.43)	N
Tracy (Downtown)			-	-	Along west side of San Joaquin Valley; riparian and stream corridors	-	-	N
Tracy (ACE)			-	-	Along west side of San Joaquin Valley; riparian and stream corridors	-	0.08 (0.03)	N

Corridor	Possible Alignments	Alignment Alternative	Number of Special-Status Plant Species	Number of Special-Status Wildlife Species	Wildlife Movement Corridor	Non-Wetland Waters in Linear Feet	Wetlands in Acres (Hectares)	Marine/Anadromous Fish Resources
San Francisco Bay Crossings	1 of 2	Trans Bay Crossing – Transbay Transit Center	1	-	West side of San Francisco Bay and riparian and stream corridors	-	22.83 (9.24)	Y
		Trans Bay Crossing – 4 <sup>th</sup> & King	1	-	West side of San Francisco Bay and riparian and stream corridors	-	22.04 (8.92)	Y
	1 of 6	Dumbarton (High Bridge)	15	21	East and west shores of San Francisco Bay	2,361	33.9 (13.7)	Y
		Dumbarton (Low Bridge)	15	21	East and west shores of San Francisco Bay	2,361	33.9 (13.7)	Y
		Dumbarton (Tube)	15	21	East and west shores of San Francisco Bay	2,361	33.9 (13.7)	Y
		Fremont Central Park (High Bridge)	16	23	East and west shores of San Francisco Bay	3,117	55.35 (22.4)	Y
		Fremont Central Park (Low Bridge)	16	23	East and west shores of San Francisco Bay	3,117	55.35 (22.4)	Y
		Fremont Central Park (Tube)	16	23	East and west shores of San Francisco Bay	3,117	55.35 (22.4)	Y

Corridor	Possible Alignments	Alignment Alternative	Number of Special-Status Plant Species	Number of Special-Status Wildlife Species	Wildlife Movement Corridor	Non-Wetland Waters in Linear Feet	Wetlands in Acres (Hectares)	Marine/Anadromous Fish Resources
<b>Station Location Options</b>								
Union City (Shinn)			-	-	East and west shores of San Francisco Bay	-	-	N
<b>Central Valley</b>	1 of 6	BNSF – UPRR	22	22	East-west linkage corridor between valley floor natural lands and natural lands along east side of San Joaquin valley	10,137	3.76 (1.52)	Y
		BNSF	22	22	East-west linkage corridor between valley floor natural lands and natural lands along east side of San Joaquin valley	10,528	3.41 (1.38)	Y
		UPRR N/S	22	21	None	7,161	3.04 (1.23)	Y
		BNSF Castle	19	22	East-west linkage corridor between valley floor natural lands and natural lands along east side of San Joaquin valley	9,094	3.11 (1.26)	Y
		UPRR – BNSF Castle	22	22	East-west linkage corridor between valley floor natural lands and natural lands along east side of San Joaquin valley	7,790	2.39 (0.97)	Y
		UPRR – BNSF	25	22	East-west linkage corridor between valley floor natural lands and natural lands along east side of San Joaquin valley	8,833	3.04 (1.23)	Y

Corridor	Possible Alignments	Alignment Alternative	Number of Special-Status Plant Species	Number of Special-Status Wildlife Species	Wildlife Movement Corridor	Non-Wetland Waters in Linear Feet	Wetlands in Acres (Hectares)	Marine/Anadromous Fish Resources
<b>Station Location Options</b>								
Modesto (Downtown)			-	1	East-west linkage corridor between valley floor natural lands and natural lands along east side of San Joaquin valley	-	-	N
Briggsmore (Amtrak)			-	-	East-west linkage corridor between valley floor natural lands and natural lands along east side of San Joaquin valley	-	-	N
Merced (Downtown)			-	1	East-west linkage corridor between valley floor natural lands and natural lands along east side of San Joaquin valley	-	-	N
Castle AFB			-	-	East-west linkage corridor between valley floor natural lands and natural lands along east side of San Joaquin valley	315	-	N



### San Francisco to San Jose Corridor

#### **San Francisco to Dumbarton Alignment Alternative**

The San Francisco to Dumbarton alignment alternative could have direct impacts on 1.97 ac (0.8 ha) of grasslands, 6.17 ac (2.5 ha) of open waters, 0.84 ac (0.34 ha) of saline-brackish permanent wetlands, 5.01 ac (2.03 ha) of seasonal wetlands, 0.41 ac (0.17 ha) of unvegetated flats, and 125.27 ac (50.7 ha) of urban/other developed areas. This alignment could have indirect impacts on 18.78 ac (7.6 ha) of bay waters, 49.60 ac (20.07 ha) of grasslands, 120.21 ac (48.65 ha) of open waters, 15.05 ac (6.09 ha) of saline-brackish permanent wetlands, 137.95 ac (55.83 ha) of seasonal wetlands, 11.78 ac (4.77 ha) of shrub lands, 14.52 ac (5.88 ha) of unvegetated flats, and 5,813.07 ac (2,352.48 ha) of urban/other developed lands.

#### *Sensitive Vegetation Communities*

The sensitive vegetation communities in this alignment are seasonal and permanent freshwater wetlands.

#### *Special-Status Plants*

The San Francisco to Dumbarton alignment alternative could adversely affect the habitat of 19 special-status plant species (Table 3.15-1). Those species that are federally or state listed as threatened or endangered would be of special concern because of the protection afforded them under the ESA and CESA.

#### *Special-Status Wildlife*

The San Francisco to Dumbarton alignment alternative could adversely affect the habitat of 29 special-status wildlife species, including several species of butterflies, amphibians, reptiles, shorebirds, and small mammals (Table 3.15-1). This alignment alternative also has the potential to impact marine/anadromous species.

#### *Wildlife Movement Corridors*

Most of the region is urbanized, and there are limited data available on wildlife movement/migration corridors in this area. All of the riparian and stream corridors between the Santa Cruz Mountains and the San Francisco Bay provide corridors for wildlife movement. There could be impacts on these streams and riparian corridors. The western shore of the San Francisco Bay provides a critical movement corridor for nesting and foraging birds and other wildlife. The Wilderness Coalition has identified this as a critical linkage corridor (2000) (Figure 3.15-3). Impacts on the western side of the San Francisco Bay are expected to be minimal.

#### *Water Resources/Wetlands*

The San Francisco to Dumbarton alignment alternative has the potential to impact approximately 590 ft (180 m) of potential non-wetland waters and approximately 0.08 ac (0.03 ha) of wetlands. This alignment is in proximity to the western shore of the San Francisco Bay and crosses several water resources, including Oyster Point Channel, San Mateo Creek, and other small streams.

#### *Conservation Plans*

The San Francisco to Dumbarton alignment alternative could adversely impact the South San Francisco Bay Core Area identified in the *Recovery Plan for the California Red-legged Frog* (U.S. Fish and Wildlife Service 2002). In addition, this alignment alternative could adversely affect designated critical habitat for the Bay checkerspot butterfly.

#### **Dumbarton to San Jose Alignment Alternative**

The Dumbarton to San Jose alignment alternative could have direct impacts on 1.08 ac (0.44 ha) of grasslands, 0.05 ac (0.02 ha) of open waters, 0.10 ac (0.04 ha) of shrub lands, and 108.56 ac (43.93 ha) of urban/other developed lands. This alignment alternative could have indirect impacts on 22.55 ac (9.13 ha) of grasslands, 1.66 ac (0.67 ha) of open waters, 7.28 ac (2.95 ha) of shrub lands, and 4,808.38 ac (1,945.89 ha) of urban/other developed lands.

*Sensitive Vegetation Communities*

The sensitive vegetation communities in this alignment are seasonal and permanent freshwater wetlands.

*Special-Status Plants*

The Dumbarton to San Jose Alignment could adversely affect the habitat of five special-status plant species (Table 3.15-1). These species would also be affected by the San Francisco to Dumbarton alignment alternative.

*Special-Status Wildlife*

The Dumbarton to San Jose alignment alternative could adversely affect the habitat of 19 special-status wildlife species, including species of amphibians, reptiles, birds, and small mammals (Table 3.15-1). This alignment alternative also has the potential to impact marine/anadromous species.

*Wildlife Movement Corridors*

Impacts on wildlife movement corridors for this alignment would be the same as the San Francisco to Dumbarton alignment alternative.

*Water Resources/Wetlands*

This alignment has the potential to impact approximately 672 ft (205 m) of potential non-wetland waters. This alignment alternative is also in proximity to the western shore of the San Francisco Bay and crosses San Francisquito/Los Trancos Creek, Matadero Creek, Adobe Creek, and other small streams.

*Conservation Plans*

Similar to the San Francisco to Dumbarton alignment alternative, this alignment alternative could adversely impact the South San Francisco Bay Core Area identified in the *Recovery Plan for the California Red-legged Frog* (U.S. Fish and Wildlife Service 2002).

**San Francisco to San Jose Corridor Stations**

- **Transbay Transit Center:** This station could have direct impacts on 5.8 ac (2.35 ha) of urban/other developed lands. This station could have indirect impacts on 0.01 ac (0.004 ha) of Bay waters and 140 ac (56.66 ha) of urban/other developed lands. This station could adversely affect the habitat of one special-status plant species. Impacts on special-status wildlife species, waters, wetlands, and marine/anadromous species are not anticipated with this station location.
- **4<sup>th</sup> and King (Caltrain) Station:** This station could have direct impacts on 32.8 ac (13.27 ha) of urban/other developed lands. This station could have indirect impacts on 2 ac (0.8 ha) of open water and 256 ac (103.6 ha) of urban/other developed lands. This station could adversely affect the habitat of one special-status plant species. Impacts on special-status wildlife species, waters, wetlands, and marine/anadromous species are not anticipated with this station location.
- **Millbrae/SFO Station:** This station could have direct impacts on 7.1 ac (2.87 ha) of urban/other developed lands. This station could have indirect impacts on 0.5 ac (0.2 ha) of grasslands, 26 ac (10.5 ha) of seasonal wetlands, and 122 ac (49.37 ha) of urban/other developed lands. Impacts on special-status plant and wildlife species, waters, wetlands, and marine/anadromous species are not anticipated at this station location.
- **Redwood City (Caltrain) Station:** This station could have direct impacts on 3.2 ac (1.3 ha) of urban/other developed lands. This station could have indirect impacts on 0.2 ac (0.08 ha) of grasslands, 130 ac (52.6 ha) of urban/other developed lands. Impacts on special-status plant and wildlife species, waters, wetlands, and marine/anadromous species are not anticipated at this station location.
- **Palo Alto (Caltrain) Station:** This station could have direct impacts on 14.2 ac (5.75 ha) of urban/other developed lands. This station could have indirect impacts on 0.8 ac (0.3 ha) of

grasslands and 204 ac (82.56 ha) of urban/other developed lands. This station could adversely affect the habitat of one special-status wildlife species. Impacts on special-status plant species, waters, wetlands, and marine/anadromous species are not anticipated with this station location.

### **Summary of San Francisco to San Jose Corridor Impacts**

#### *Sensitive Vegetation Communities*

The sensitive vegetation communities in this corridor are seasonal and permanent freshwater wetlands.

#### *Special-Status Plants*

Both the alignment alternatives in the San Francisco to San Jose corridor could adversely affect the habitat of 19 special-status plant species.

#### *Special-Status Wildlife*

The San Francisco to Dumbarton alignment alternative could adversely affect habitat for the Bay checkerspot butterfly, callippe silverspot, mission blue butterfly, and San Bruno elfin butterfly; nesting habitat for brown pelican, black rail, California clapper rail, California least tern, double-crested cormorant, and salt marsh common yellowthroat; and salt marsh harvest mouse and salt marsh wandering shrew.

The Dumbarton to San Jose alignment alternative could adversely affect habitat for California tiger salamander.

#### *Wildlife Movement Corridors*

Both alignment alternatives would have minimal impact on wildlife movement corridors along the western shore of the San Francisco Bay.

#### *Water Resources/Wetlands*

This corridor has the potential to directly impact approximately 1,260 ft (384 m) of potential non-wetland waters and approximately 0.08 ac (0.03 ha) of wetlands.

#### *Conservation Plans*

Only the San Francisco to Dumbarton alignment alternative would have the potential to adversely affect designated critical habitat for the Bay checkerspot butterfly in the San Francisco to San Jose corridor. Both alignment alternatives could adversely impact the South San Francisco Bay Core Area identified in the *Recovery Plan for the California Red-legged Frog* (U.S. Fish and Wildlife Service 2002).

### **Oakland to San Jose Corridor**

#### **West Oakland to Niles Junction Alignment Alternative**

The West Oakland to Niles Junction alignment alternative could have direct impacts on 0.47 ac (0.19 ha) of grasslands and 62.13 ac (25.14 ha) of urban/other developed lands. This alignment alternative could have indirect impacts on 123.40 ac (49.94 ha) of grasslands, 2.00 ac (0.81 ha) of open waters, 0.15 ac (0.06 ha) of shrub lands, 6.74 ac (2.73 ha) of unvegetated flats, and 2,913.18 ac (1,178.93 ha) of urban/other developed lands.

#### *Sensitive Vegetation Communities*

There are no sensitive vegetation communities in this alignment alternative.

#### *Special-Status Plants*

The West Oakland to Niles Junction alignment alternative could adversely affect the habitat of five special-status plant species (Table 3.15-1).

*Special-Status Wildlife*

The West Oakland to Niles Junction alignment alternative could adversely affect the habitat of 23 special-status wildlife species, including species of amphibians, reptiles, shorebirds, and small mammals (Table 3.15-1).

*Wildlife Movement Corridors*

All the riparian and stream corridors crossed by this alignment alternative provide corridors for wildlife movement between the Diablo Range and the San Francisco Bay. There could be impacts on these streams and riparian corridors. The Wilderness Coalition (2000) identified critical linkage corridors along the eastern shore of San Francisco Bay, as well as a corridor linking the San Francisco Bay to the Diablo Range (Figure 3.15-3). This alignment alternative is expected to have minimal impacts on the eastern shore of San Francisco Bay. This alignment alternative could have minor impacts on the corridor linking the San Francisco Bay to the Diablo Range. This alignment alternative also has the potential to impact marine/anadromous species.

*Water Resources/Wetlands*

This alignment alternative has the potential to directly impact approximately 455 ft (139 m) of potential non-wetland waters and approximately 0.11 ac (0.04 ha) of wetlands. This alignment is in proximity to the eastern shore of the San Francisco Bay and crosses or is adjacent to a number of water resources, including a tributary to Lake Merritt, San Leandro Creek, and several other small streams.

*Conservation Plans*

This alignment alternative would not affect habitats or species in any conservation plan.

**12<sup>th</sup> Street/City Center to Niles Junction Alignment Alternative**

The 12<sup>th</sup> Street/City Center to Niles Junction alignment alternative could have direct impacts on 0.47 ac (0.19 ha) of grasslands and 59.27 ac (23.99 ha) of urban/other developed lands. This alignment alternative could have indirect impacts on 123.10 ac (49.82 ha) of grasslands, 1.66 ac (0.67 ha) of open waters, 0.15 ac (0.06 ha) of shrub lands, 6.74 ac (2.73 ha) of unvegetated flats, and 2,658.42 ac (1,075.83 ha) of urban/other developed lands.

*Sensitive Vegetation Communities*

There are no sensitive vegetation communities in this alignment alternative.

*Special-Status Plants*

The 12<sup>th</sup> Street/City Center to Niles Junction alignment alternative could adversely affect the habitat of six special-status plant species (Table 3.15-1). Five of the species are the same as in the West Oakland to Niles Junction alignment alternative.

*Special-Status Wildlife*

The 12<sup>th</sup> Street/City Center to Niles Junction alignment alternative could adversely affect the habitat of the same 23 special-status wildlife species that the West Oakland to Niles Junction alignment alternative could affect. This alignment alternative also has the potential to impact marine/anadromous species.

*Wildlife Movement Corridors*

Impacts on wildlife movement corridors from this alignment alternative would be the same as the West Oakland to Niles Junction alignment alternative.

*Water Resources/Wetlands*

This alignment alternative would have the same potential impacts on non-wetland waters and wetlands.



*Conservation Plans*

This alignment would not affect habitats or species in any conservation plan.

**Niles Junction to San Jose via Trimble Alignment Alternative**

The Niles Junction to San Jose via Trimble alignment alternative could have direct impacts on 7.34 ac (2.97 ha) of grasslands, 0.71 ac (0.29 ha) of open water, 0.04 ac (0.01 ha) of riparian habitat, 2.28 ac (0.92 ha) of seasonal wetlands, and 79.46 ac (32.16 ha) of urban/other developed lands. This alignment alternative could have indirect impacts on 51.01 ac (20.64 ha) of agricultural lands, 380.72 ac (154.07 ha) of grasslands, 0.39 ac (0.16 ha) of managed bay lands, 30.12 ac (12.19 ha) of open waters, 0.37 ac (0.15 ha) of riparian habitat, 0.48 ac (0.19 ha) of saline-brackish permanent wetland, 96.71 ac (39.14 ha) of seasonal wetlands, 0.22 ac (0.09 ha) of shrub land, and 3,548.55 ac (1,436.46 ha) of urban/other developed lands.

*Sensitive Vegetation Communities*

The sensitive vegetation communities in this alignment alternative are the riparian, seasonal wetlands, and saline-brackish permanent wetlands.

*Special-Status Plants*

The Niles Junction to San Jose via Trimble alignment alternative could adversely affect the habitat of six special-status plant species (Table 3.15-1).

*Special-Status Wildlife*

The Niles Junction to San Jose via Trimble alignment alternative could adversely affect the habitat of 25 special-status wildlife species, including species of aquatic invertebrates, amphibians, reptiles, shorebirds, and small mammals (Table 3.15-1). Species with limited habitats or ranges, such as the aquatic invertebrates species, would be of special concern because of the adverse effects that even small impacts on their habitat could cause. This alignment alternative also has the potential to impact marine/anadromous species.

*Wildlife Movement Corridors*

Impacts on wildlife movement corridors from this alignment alternative would be the same as the West Oakland to Niles Junction alignment alternative.

*Water Resources/Wetlands*

This alignment alternative has the potential to directly impact approximately 958 ft (292 m) of potential non-wetland waters and approximately 1.3 ac (0.53 ha) of wetlands. This alignment alternative crosses or is adjacent to a number of water resources, including Lake Elizabeth, Coyote Creek, Guadalupe River, and several other small streams.

*Conservation Plans*

The Niles Junction to San Jose via Trimble alignment alternative could negatively impact the Southeast San Francisco Bay core area identified in the *Recovery Plan for Vernal Pool Ecosystems* (U.S. Fish and Wildlife Service 2005).

*Special Management Areas*

The Niles Junction to San Jose via Trimble alignment alternative could have negative impacts on the Don Edwards San Francisco Bay National Wildlife Refuge.

**Niles Junction to San Jose via I-880 Alignment Alternative**

The Niles Junction to San Jose via I-880 alignment alternative could have direct impacts on 8.09 ac (3.27 ha) of grasslands, 0.71 ac (0.29 ha) of open water, 0.04 ac (0.01 ha) of riparian habitat, 2.28 ac (0.92 ha) of seasonal wetlands, and 69.19 ac (28 ha) of urban/other developed lands. This alignment alternative could have indirect impacts on 51.01 ac (20.64 ha) of agricultural lands, 424.88 ac (171.94 ha) of grasslands, 0.39 ac (0.16 ha) of managed bay lands, 30.12 ac (12.19 ha) of open

waters, 0.37 ac (0.15 ha) of riparian habitat, 0.48 ac (0.19 ha) of saline-brackish permanent wetland, 96.71 ac (39.14 ha) of seasonal wetlands, 0.22 ac (0.09 ha) of shrub land, and 4,289.25 ac (1,753.81 ha) of urban/other developed lands.

#### *Sensitive Vegetation Communities*

The sensitive vegetation communities in this alignment alternative are the riparian, seasonal wetlands, and saline-brackish permanent wetlands.

#### *Special-Status Plants*

The Niles Junction to San Jose via I-880 alignment alternative could adversely affect the habitat of five special-status plant species (Table 3.15-1). These species are the same as those identified in the Niles Junction to San Jose via Trimble alignment alternative.

#### *Special-Status Wildlife*

The Niles Junction to San Jose via I-880 alignment alternative could adversely affect the habitat of the same 25 special-status wildlife species as the Niles Junction via Trimble alignment alternative. This alignment alternative also has the potential to impact marine/anadromous species.

#### *Wildlife Movement Corridors*

Impacts on wildlife movement corridors from this alignment alternative would be the same as the West Oakland to Niles Junction alignment alternative.

#### *Water Resources/Wetlands*

This alignment alternative has the potential to directly impact approximately 1,080 ft (329 m) of potential non-wetland waters and approximately 1.8 ac (0.73 ha) of wetlands. Similar to the Niles Junction to San Jose via Trimble alignment alternative, this alignment alternative crosses or is adjacent to several water resources, including Lake Elizabeth, Coyote Creek, Guadalupe River, and a number of other small streams.

#### *Conservation Plans*

Impacts on habitats and species identified in conservation plans from this alignment alternative would be the same as for the Niles Junction to San Jose via Trimble alignment alternative.

#### *Special Management Areas*

Impacts on special management areas from this alignment alternative would be the same as for the Niles Junction to San Jose via Trimble alignment alternative.

### **Oakland to San Jose Corridor Stations**

- West Oakland/7<sup>th</sup> Street Station: This station location option could have direct impacts on 2.6 ac (1.05 ha) of urban/other developed lands. This station location option could have indirect impacts on 0.3 ac (0.12 ha) of grasslands and 121 ac (48.97 ha) of urban/other developed lands. Impacts on special-status plant and wildlife species, waters, wetlands, and marine/anadromous species are not anticipated at this station location.
- 12<sup>th</sup> Street/City Center Station: This station location option could have direct impacts on 9.9 ac (4 ha) of urban/other developed lands. This station location option could have indirect impacts on 0.2 ac (0.08 ha) of grasslands, 0.6 ac (0.24 ha) of open waters, and 126 ac (51 ha) of urban/other developed lands. Impacts on special-status plant and wildlife species, waters, wetlands, and marine/anadromous species are not anticipated at this station location option.
- Coliseum/Airport Station: This station location option could have direct impacts on 10.5 ac (4.25 ha) of urban/other developed lands. This station location option could have indirect impacts on 0.2 ac (0.08 ha) of grasslands, 6.5 ac (2.63 ha) of unvegetated flats, and 162 ac (65.56 ha) of urban/other developed lands. Impacts on special-status plant and wildlife species

are not anticipated at this station location. This station could impact 482 linear ft (147 m) of waters and 0.6 ac (0.24 ha) of wetlands and potentially impact marine/anadromous species.

- Union City (BART) Station: This station location option could have direct impacts on 1.1 ac (0.45 ha) of grasslands and 47 ac (19 ha) of urban/other developed lands. This station location option could have indirect impacts on 6.6 ac (2.67 ha) of grasslands, 0.05 ac (0.02 ha) of open waters, and 251 ac (101.58 ha) of urban/other developed lands. Impacts on special-status plant and wildlife species, waters, wetlands, and marine/anadromous species are not anticipated at this station location option.
- Union City (Shinn) Station: This station location option could have direct impacts on 0.4 ac (0.16 ha) of grasslands and 12 ac (4.86 ha) of urban/other developed lands. This station location option could have indirect impacts on 7.2 ac (2.91 ha) of grasslands, 15 ac (6.07 ha) of open water, and 152 ac (61.51 ha) of urban/other developed lands. Impacts on special-status plant and wildlife species, waters, wetlands, and marine/anadromous species are not anticipated at this station location.
- Fremont (Warm Springs) Station: This station location option could have direct impacts on 20 ac (8.09 ha) of grasslands and 51 ac (20.64 ha) of urban/other developed lands. This station location option could have indirect impacts on 71 ac (28.73 ha) of grasslands, 4 ac (1.62 ha) of open water, and 266 ac (107.65 ha) of urban/other developed lands. Impacts on special-status plant and wildlife species, waters, wetlands, and marine/anadromous species are not anticipated at this station location.

### **Summary of Oakland to San Jose Corridor Impacts**

#### *Sensitive Vegetation Communities*

The sensitive vegetation communities in this corridor were identified in the Niles Junction to San Jose via I-880 and San Jose via Trimble alignment alternatives and were riparian, seasonal wetlands, and saline-brackish permanent wetlands.

#### *Special-Status Plants*

All of the special-status plant species that have the potential to be affected in the West Oakland to Niles Junction alignment alternative would also be affected in the 12<sup>th</sup> Street/City Center to Niles Junction alignment alternative. The same is true for the Niles Junction to San Jose via I-880 alignment alternative, as compared to the San Jose via Trimble alignment alternative. Both the 12<sup>th</sup> Street/City Center to Niles Junction and San Jose via Trimble alignment alternatives include one additional species.

#### *Special-Status Wildlife*

The special-status wildlife species that have the potential to be affected by the West Oakland to Niles Junction and the 12<sup>th</sup> Street/City Center to Niles Junction alignment alternatives are the same. The special-status wildlife that have the potential to be affected by the Niles Junction to San Jose via I-880 and the Niles Junction to San Jose via Trimble alignment alternatives are the same.

#### *Wildlife Movement Corridors*

Both the West Oakland to Niles Junction and the 12<sup>th</sup> Street/City Center to Niles Junction alignment alternatives would have minimal impact on the east shore of San Francisco Bay. These alignment alternatives could impact the streams and riparian corridors linking the Bay to the Diablo Range. Both the Niles Junction to San Jose via I-880 and the Niles Junction to San Jose via Trimble alignment alternatives could impact the wildlife movement corridor along the eastern shore of San Francisco Bay. These alignment alternatives could also have impacts on the streams and riparian corridors linking the Bay to the Diablo Range.

*Water Resources/Wetlands*

This potential nonwetland jurisdictional waters and wetlands that could be affected by either the West Oakland to Niles Junction or 12<sup>th</sup> Street/City Center to Niles Junction alignment alternatives would be similar. The Niles Junction to San Jose via I-880 alignment alternative would have slightly greater impacts on waters and wetlands compared to the Niles Junction to San Jose via Trimble alignment alternative.

*Conservation Plans*

Both the Niles Junction to San Jose via I-880 alignment alternative and the Niles Junction to San Jose via Trimble alignment alternative could negatively impact the Southeast San Francisco Bay core area identified in the *Recovery Plan for Vernal Pool Ecosystems* (U.S. Fish and Wildlife Service 2005).

*Special Management Areas*

Both the Niles Junction to San Jose via I-880 and the Niles Junction to San Jose via Trimble alignment alternatives could negatively impact the Don Edwards San Francisco Bay National Wildlife Refuge.

San Jose to Central Valley Corridor**Pacheco Alignment Alternative**

The Pacheco alignment alternative could have direct impacts on 85.45 ac (34.58 ha) of agricultural lands, 64.04 ac (25.92 ha) of grasslands, 11.55 ac (4.67 ha) of oak woodland/foothill pine, 4.06 ac (1.64 ha) of shrub lands, and 123.91 ac (50.14 ha) of urban/other developed lands. This alignment alternative could have indirect impacts on 4,716.43 ac (1,908.68 ha) of agricultural lands, 3,968.53 ac (1,606.01 ha) of grasslands, 925.92 ac (374.71 ha) of oak and foothill pine woodlands, 32.98 ac (13.35 ha) of open waters, 243.11 ac (98.38 ha) of shrub lands, and 4,689.15 ac (1,897.64 ha) of urban/other developed lands.

*Sensitive Vegetation Communities*

The sensitive vegetation community in this alignment alternative is oak woodlands.

*Special-Status Plants*

The Pacheco alignment alternative could adversely affect the habitat of 23 special-status plant species (Table 3.15-1).

*Special-Status Wildlife*

The Pacheco alignment alternative could adversely affect the habitat of 27 special-status wildlife species, including species of invertebrates, amphibians, reptiles, raptors, and mammals (Table 3.15-1). This alignment alternative also has the potential to impact marine/anadromous species.

*Wildlife Movement Corridors*

The streams, and associated riparian habitats, flowing from the Diablo Range and the Santa Cruz Mountains that would be crossed by the Pacheco alignment alternative provide movement corridors for fish and wildlife species. The alignment alternative would bisect movement corridors through the Diablo Range. Because the alignment alternative would be elevated over drainages, it is not anticipated to impact the major drainages, such as Coyote Creek, the Pajaro River, Tres Pinos Creek, the Pacheco Creek, and other drainages, which provide wildlife movement corridors.

*Water Resources/Wetlands*

This alignment alternative has the potential to directly impact approximately 1,960 ft (597 m) of potential nonwetland jurisdictional waters and approximately 0.11 ac (0.04 ha) of wetlands. The Pacheco alignment alternative crosses or is adjacent to a number of water resources, including Coyote Creek, Los Gatos Creek, Miller Slough, and the Pajaro River, and a number of other small streams.



*Conservation Plans*

The Pacheco alignment alternative could adversely impact designated critical habitat for the Bay checkerspot butterfly and the California tiger salamander. This alignment alternative could also adversely impact the South San Francisco Bay Core Area identified in the *Recovery Plan for the California Red-Legged Frog* (U.S. Fish and Wildlife Service 2002).

*Special Management Areas*

The Pacheco alignment alternative would not traverse through the Henry Coe State Park, located northeast of Gilroy, or the Pacheco State Park near San Luis Reservoir, and there are no anticipated impacts on these state parks as a result of this alignment alternative. This alignment alternative would traverse lands that have been protected by the Nature Conservancy as part of its Mount Hamilton Project and could have adverse impacts on these protected lands. It would extend through the CDFG Upper Cottonwood Creek Wildlife Area resulting in adverse impacts where the alignment is not in tunnel. The alignment would be in tunnel approximately 1.1 miles, or about 46%, within the wildlife area as shown on Figure 3.15-4.

**Henry Miller (UPRR Connection) Alignment Alternative**

The Henry Miller (UPRR Connection) alignment alternative could have direct impacts on 211.90 ac (85.75 ha) of agricultural lands, 121.06 ac (49 ha) of grasslands, 6.25 ac (2.53 ha) of oak woodland/foothill pine, 2.24 ac (0.91 ha) of open waters, 1.34 ac (0.54 ha) of permanent freshwater wetlands, 0.59 ac (0.24 ha) of riparian habitat, 2.32 ac (0.94 ha) of seasonal wetlands, 0.11 ac (0.04 ha) of shrub lands, and 33.97 ac (13.75 ha) of urban/other developed lands. This alignment alternative could have indirect impacts on 11,987.68 ac (4,851.26 ha) of agricultural lands, 6,430.46 ac (2,602.33 ha) of grasslands, 0.15 ac (0.06 ha) of montane hardwood forest, 314.30 ac (127.19 ha) of oak and foothill pine woodlands, 164.36 ac (66.51 ha) of open waters, 121.78 ac (49.28 ha) of permanent freshwater wetlands, 11.03 ac (4.46 ha) of riparian habitat, 134.04 ac (54.24 ha) of seasonal wetlands, 6.96 ac (2.82 ha) of shrub lands, and 1,453.91 ac (588.39 ha) of urban/other developed lands.

*Sensitive Vegetation Communities*

The sensitive vegetation communities within this alignment alternative are seasonal wetlands, permanent freshwater wetlands, riparian, and oak woodlands.

*Special-Status Plants*

The Henry Miller (UPRR Connection) alignment alternative could adversely affect the habitat of 25 special-status plant species, including species of invertebrates, amphibians, reptiles, raptors and other birds, and mammals (Table 3.15-1).

*Special-Status Wildlife*

The Henry Miller (UPRR Connection) alignment alternative could adversely affect the habitat of 34 special-status wildlife species, including species of invertebrates, amphibians, reptiles, raptors and other birds, and mammals (Table 3.15-1). Species with limited habitats or ranges, such as the aquatic invertebrates, and those with limited nesting ranges, such as willow flycatcher and least Bell's vireo, would be of special concern because of the adverse effects that even small impacts on their habitat could cause.

*Wildlife Movement Corridors*

The Henry Miller (UPRR Connection) alignment alternative would bisect the major San Joaquin kit fox movement corridor between the southern portion of its range and the northern portion of its range along the west side of the San Joaquin Valley. The Henry Miller (UPRR Connection) alignment alternative also crosses the San Joaquin River, which is a movement corridor for fish and bird species.

*Water Resources/Wetlands*

This alignment alternative has the potential to directly impact approximately 10,590 ft (3,228 m) of potential non-wetland waters and approximately 11.6 ac (4.69 ha) of wetlands. The Henry Miller (UPRR Connection) alignment alternative crosses the San Joaquin River, sloughs, and creeks.

*Conservation Plans*

Similar to the Pacheco alignment alternative, the Henry Miller (UPRR Connection) alignment alternative could adversely impact the East San Francisco Bay Core Area identified in the *Recovery Plan for the for California Red-legged Frog* (U.S. Fish and Wildlife Service 2002).

*Special Management Areas*

Similar to the Pacheco alignment alternative, the Henry Miller (UPRR Connection) alignment alternative would traverse lands that have been protected by the Nature Conservancy as part of its Mount Hamilton Project and could have adverse impacts on these protected lands. This alignment alternative would also adversely impact the GEA. The alignment would pass north of the San Luis Reservoir State Recreation Area and O'Neill Forebay Wildlife Area. It would also traverse the area known as the GEA, but it would not result in direct impacts on the CDFG Volta Wildlife Area or the San Luis National Wildlife Refuge Complex as shown on Figure 3.15-4. The Henry Miller alignment alternative would extend immediately adjacent to and elevated above the roadway where it crosses the Los Banos Wildlife Area.

**Henry Miller (BNSF Connection) Alignment Alternative**

The Henry Miller (BNSF Connection) alignment alternative could have direct impacts on 227.68 ac (92.14 ha) of agricultural lands, 118.84 ac (48.09 ha) of grasslands, 2.54 ac (1.03 ha) of hardwood forests, 7.53 ac (3.05 ha) of oak woodland/foothill pine, 2.43 ac (0.98 ha) of open waters, 1.34 ac (0.54 ha) of permanent freshwater marsh, 0.19 ac (0.08 ha) of riparian habitat, 1.54 ac (0.62 ha) of seasonal wetlands, 0.52 ac (0.21 ha) of shrub lands, and 31.01 ac (12.55 ha) of urban/other developed lands. This alignment alternative could have indirect impacts on 12,428.32 ac (5,028.59 ha) of agricultural lands, 6,649.80 ac (2,691.09 ha) of grasslands, 111.97 ac (45.31 ha) of montane hardwood forest, 431.69 ac (174.7 ha) of oak and foothill pine woodlands, 166.52 ac (67.39 ha) of open waters, 123.61 ac (50.02 ha) of permanent freshwater wetlands, 3.92 ac (1.59 ha) of riparian habitat, 134.18 ac (54.3 ha) of seasonal wetlands, 20.72 ac (8.39 ha) of shrub lands, and 1,358.76 ac (549.87 ha) of urban/other developed lands.

*Sensitive Vegetation Communities*

The sensitive vegetation communities within this alignment alternative are seasonal wetlands, permanent freshwater wetlands, permanent freshwater marsh, riparian, and oak woodlands.

*Special-Status Plants*

The Henry Miller (BNSF Connection) alignment alternative could adversely affect the habitat of the same 25 special-status plant species that the Henry Miller (UPRR Connection) alignment alternative could affect.

*Special-Status Wildlife*

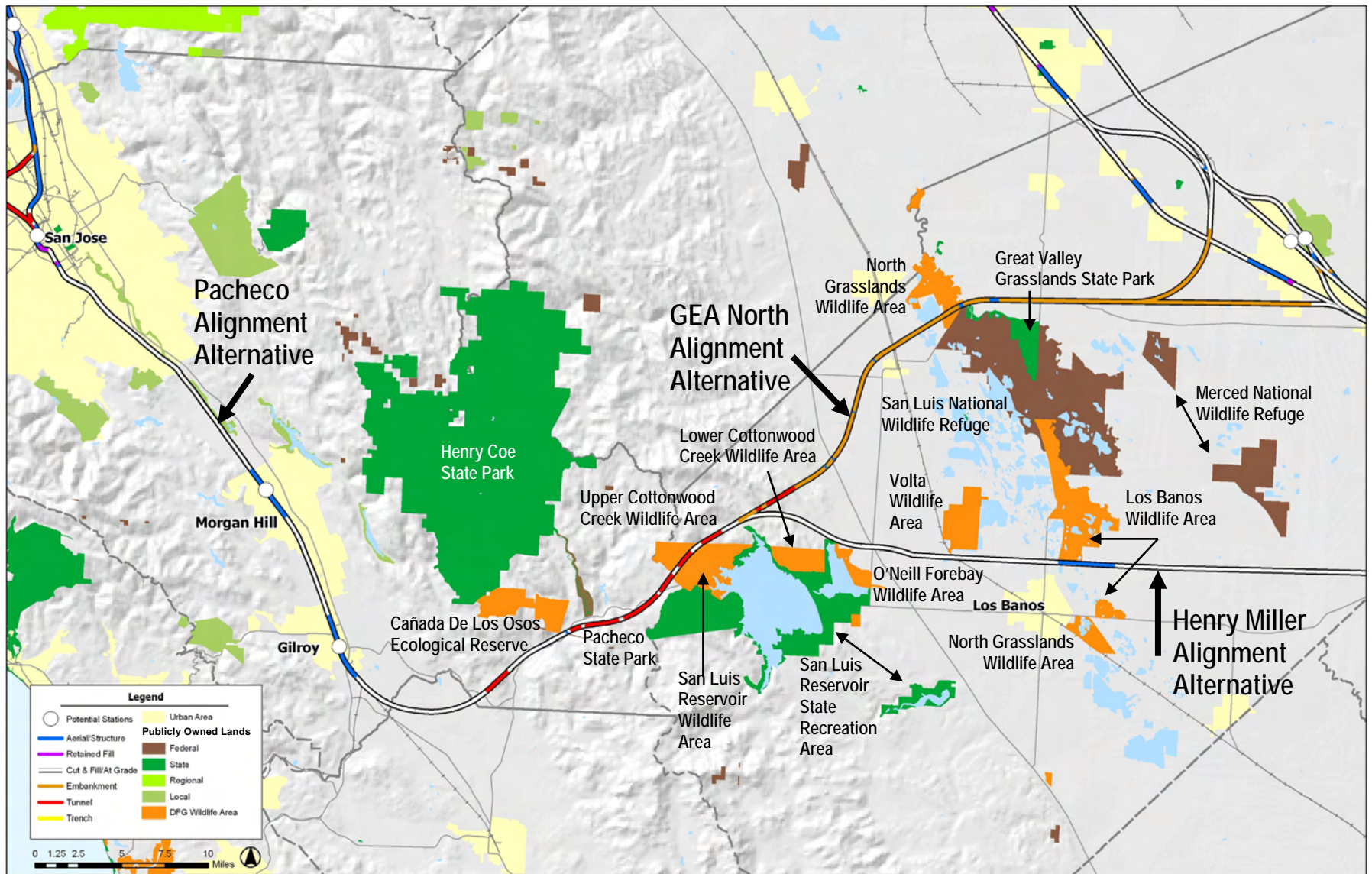
The Henry Miller (BNSF Connection) alignment alternative could adversely affect the habitat of the same 34 special-status wildlife species as the Henry Miller (UPRR Connection) alignment alternative.

*Wildlife Movement Corridors*

Impacts on wildlife movement corridors from this alignment alternative would be the same as those for the Henry Miller (UPRR Connection) alignment alternative.

*Water Resources/Wetlands*

Similar to the Henry Miller (UPRR Connection) alignment alternative, this alignment alternative has the potential to directly impact approximately 10,315 ft (3,144 m) of potential non-wetland waters



Source: USBR, BLM, CDFG, (former) Teale Data Center, USFS, California GAP Analysis Project, and the Wildlands Conservancy



U.S. Department  
of Transportation  
Federal Railroad  
Administration

Figure 3.15-4  
Public Lands – San Jose to Central Valley Corridor





and approximately 11.5 ac (4.65 ha) of wetlands. The Henry Miller (BNSF Connection) alignment alternative crosses the San Joaquin River, sloughs, and creeks.

#### *Conservation Plans*

Impacts on habitats and species identified in conservation plans from this alignment alternative would be the same as for the Henry Miller (UPRR Connection) alignment alternative.

#### *Special Management Areas*

Impacts on special management areas from this alignment alternative would be the same as for the Henry Miller (UPRR Connection) alignment alternative.

#### **GEA North Alignment Alternative**

The GEA North alignment alternative could have direct impacts on 200.03 ac (80.95 ha) of agricultural lands, 123.43 ac (49.95 ha) of grasslands, 2.89 ac (1.17 ha) of oak woodland/foothill pine, 1.21 ac (0.49 ha) of open waters, 3.17 ac (1.28 ha) of permanent freshwater marsh, 1.26 ac (0.51 ha) of riparian habitat, and 32.75 ac (13.26 ha) of urban/other developed lands. This alignment alternative could have indirect impacts on 11,631.04 ac (4,707.08 ha) of agricultural lands, 6,385.21 ac (2,584.09 ha) of grasslands, 280.35 ac (113.46 ha) of oak and foothill pine woodlands, 107.41 ac (43.47 ha) of open waters, 131.78 ac (53.33 ha) of permanent freshwater wetlands, 33.71 ac (13.64 ha) of riparian habitat, 16.31 ac (6.60 ha) of seasonal wetlands, 3.10 ac (1.25 ha) of shrub lands, and 1,408.79 ac (570.14 ha) of urban/other developed lands.

#### *Sensitive Vegetation Communities*

The sensitive vegetation communities within this alignment alternative are seasonal wetlands, permanent freshwater wetlands, permanent freshwater marsh, riparian, and oak woodlands.

#### *Special-Status Plants*

The GEA North alignment alternative could adversely affect the habitat of 22 special-status plant species (Table 3.15-1).

#### *Special-Status Wildlife*

The GEA North alignment alternative could adversely affect the habitat of 34 special-status wildlife species, including species of invertebrates, amphibians, reptiles, raptors and other birds, and mammals (Table 3.15-1). Species with limited habitats or ranges, such as the aquatic invertebrates, and those with limited nesting range, such as willow flycatcher and least Bell's vireo, would be of special concern, as would be the California tiger salamander.

#### *Wildlife Movement Corridors*

Impacts on wildlife movement corridors from this alignment alternative would be the same as for the Henry Miller (UPRR Connection) alignment alternative.

#### *Water Resources/Wetlands*

This alignment alternative has the potential to directly impact approximately 6,771 ft (2,347 m) of potential non-wetland waters and approximately 17.96 ac (7.27 ha) of wetlands, the highest of the alignment alternatives within this corridor. The GEA North alignment alternative crosses the San Joaquin River twice, sloughs, and creeks but is further north of the Henry Miller alignment alternatives and minimizes impacts on water crossings compared to either of the Henry Miller alignment alternatives.

#### *Conservation Plans*

The GEA North alignment alternative could adversely affect the GEA. The GEA has been identified as a core area of recovery in the *Recovery Plan for Vernal Pool Ecosystems* (U.S. Fish and Wildlife Service 2005).

The GEA North alignment alternative could adversely impact the East San Francisco Bay Core Area identified in the *Recovery Plan for the California Red-legged Frog* (U.S. Fish and Wildlife Service 2002).

#### *Special Management Areas*

Impacts on special management areas from this alignment alternative include the San Luis National Wildlife Area, North Grasslands Wildlife Area, and the Great Valley Grasslands State Park, which provide habitat for a number of special-status plant and wildlife species.

#### **San Jose to Central Valley Corridor Stations**

- **San Jose-Diridon Station:** This station location option could have direct impacts on 13 ac (5.26 ha) of urban/other developed lands. This station location option could have indirect impacts on 0.4 ac (0.16 ha) of grasslands, 0.2 ac (0.08 ha) of open waters, and 191 ac (77.3 ha) of urban/other developed lands. This station location option could adversely affect the habitat of one special-status plant and one wildlife species. Impacts on waters, wetlands, and marine/anadromous species are not anticipated with this station location.
- **Morgan Hill Station:** This station location option could have direct impacts on 2 ac (0.81 ha) of agricultural land, 2.2 ac (0.89 ha) of grasslands and 2.5 ac (1.01 ha) of urban/other developed lands. This station location option could have indirect impacts on 33 ac (13.35 ha) of agricultural lands, 27 ac (10.93 ha) of grasslands, 98 ac (39.66 ha) of urban/other developed lands. Impacts on special-status plant and wildlife species, waters, wetlands, and marine/anadromous species are not anticipated with this station location.
- **Gilroy Station:** This station location option could have direct impacts on 3.7 ac (1.5 ha) of agricultural land, 0.1 ac (0.04 ha) of grasslands, and 30 ac (12.14 ha) of urban/other developed lands. This station location option could have indirect impacts on 28 ac (11.33 ha) of agricultural lands, 7 ac (2.83 ha) of grasslands, and 192 ac (77.7 ha) of urban/other developed lands. This station location option could adversely affect the habitat of one special-status plant species. Impacts on special-status wildlife species, waters, wetlands, and marine/anadromous species are not anticipated with this station location.

#### **Summary of San Jose to Central Valley Corridor Impacts**

##### *Sensitive Vegetation Communities*

The sensitive vegetation communities within this corridor are seasonal wetlands, permanent freshwater wetlands, permanent freshwater marsh, riparian, and oak woodlands.

##### *Special-Status Plants*

The Henry Miller alignment alternatives have the potential to impact a greater number of special-status plant species than the GEA North alignment alternative. Both of the Henry Miller alignment alternatives have the potential to impact the same special-status plant species.

##### *Special-Status Wildlife*

Both of the Henry Miller alignment alternatives have the potential to impact the same special-status wildlife species. The special-status wildlife species that will be impacted by the Henry Miller and the GEA North alignment alternatives are essentially the same.

##### *Wildlife Movement Corridors*

Both the GEA North and the Henry Miller alignment alternatives would bisect the major San Joaquin kit fox movement corridor between the southern portion of its range and the northern portion of its range along the west side of the San Joaquin Valley.

##### *Water Resources/Wetlands*

This corridor has the potential to directly impact between approximately 8,731 ft and 12,548 ft of potential non-wetland waters and between approximately 11.7 ac (5.1 ha) and 18.07 ac (7.31 ha) of

wetlands. Both of the Henry Miller alignment alternatives have the potential to affect more jurisdictional waters than the GEA North alignment alternative, but the GEA North alignment alternative has the potential to impact more wetland areas.

#### *Conservation Plans*

The GEA North and the Henry Miller alignment alternatives could adversely affect core areas that have been identified for the recovery of the California red-legged frog.

#### *Special Management Areas*

The Pacheco alignment alternative would have adverse impacts on the Cottonwood Creek Wildlife Area where it is not in a tunnel. The GEA North and the Henry Miller alignment alternatives would traverse lands that have been protected by the Nature Conservancy as part of its Mount Hamilton Project and could have adverse impacts on these protected lands. Both the GEA North and Henry Miller alignment alternatives would adversely impact the GEA. The Henry Miller alignment alternative would extend immediately adjacent to and elevated above the roadway where it crosses the Los Banos Wildlife Area.

The GEA North alignment alternative would adversely affect special management areas within the GEA, including the San Luis National Wildlife Refuge, North Grasslands Wildlife Area, and the Great Valley Grasslands State Park, which provide habitat for a number of special-status plant and wildlife species.

#### East Bay to Central Valley Corridor

##### **I-680/I-580/UPRR Alignment Alternative**

The I-680/I-580/UPRR alignment alternative could have direct impacts on 0.17 ac (0.07 ha) of agricultural lands, 48.82 ac (19.76 ha) of grasslands, 4.57 ac (1.85 ha) of oak woodland/foothill pine, 0.01 ac (0.004 ha) of shrub lands, and 96.02 ac (38.86 ha) of urban/other developed lands. This alignment alternative could have indirect impacts on 408.03 ac (165.12 ha) of agricultural lands, 4,016.15 ac (1,625.29 ha) of grasslands, 183.89 ac (74.42 ha) of oak and foothill pine woodlands, 4.58 ac (1.85 ha) of open waters, 1.74 ac (0.7 ha) of shrub lands, and 3,275.32 ac (1,325.48 ha) of urban/other developed lands.

#### *Sensitive Vegetation Communities*

The sensitive vegetation community within this alignment alternative is oak woodlands.

#### *Special-Status Plants*

The I-680/I-580/UPRR alignment alternative could adversely affect the habitat of 24 special-status plant species (Table 3.15-1).

#### *Special-Status Wildlife*

The I-680/I-580/UPRR alignment alternative could adversely affect the habitat of 29 special-status wildlife species, including species of invertebrates, amphibians, reptiles, raptors and other birds, and mammals (Table 3.15-1). Species with limited habitats or ranges, such as the aquatic invertebrates, would be of special concern because of the adverse effects that even a small impact to their habitat could cause. This alignment alternative also has the potential to impact marine/anadromous species.

#### *Wildlife Movement Corridors*

The I-680/I-580/UPRR alignment alternative would bisect the major San Joaquin kit fox movement corridor between the southern portion of its range and the northern portion of its range along the west side of the San Joaquin Valley.

#### *Water Resources/Wetlands*

This alignment alternative has the potential to directly impact approximately 6,290 ft (1,917.19 m) of potential nonwetland jurisdictional waters and approximately 4.4 ac (1.78 ha) of wetlands. The I-

680/I-580/UPRR alignment alternative crosses or is adjacent to Arroyo Las Positas, Cayetano Creek, as well as other streams and water bodies.

#### *Conservation Plans*

The I-680/580/UPRR alignment alternative could adversely impact the East San Francisco Bay Core Area identified in the *Recovery Plan for the California Red-legged Frog* (U.S. Fish and Wildlife Service 2002) and the Altamont Hills core area identified in the *Recovery Plan for Vernal Pool Ecosystems* (U.S. Fish and Wildlife Service 2005).

#### **I-580/UPRR Alignment Alternative**

The I-580/UPRR alignment alternative could have direct impacts on 0.11 ac (0.04 ha) of agricultural lands, 47.29 ac (19.14 ha) of grasslands, 0.88 ac (0.36 ha) of oak woodland/foothill pine, 4.30 ac (1.74 ha) of open waters, and 71.92 ac (29.11 ha) of urban/other developed lands. This alignment alternative could have indirect impacts on 367.11 ac (148.56 ha) of agricultural lands, 3,669.00 ac (1,484.80 ha) of grasslands, 59.35 ac (24.02 ha) of oak and foothill pine woodlands, 158.71 ac (64.23 ha) of open waters, 1.64 ac (0.66 ha) of shrub lands, and 2,584.57 ac (1,045.94 ha) of urban/other developed lands.

#### *Sensitive Vegetation Communities*

The sensitive vegetation community within this alignment alternative is oak woodlands.

#### *Special-Status Plants*

The I-580/UPRR alignment alternative could adversely affect the habitat of the same 24 special-status plant species as the I-680/I-580/UPRR alignment alternative.

#### *Special-Status Wildlife*

The I-580/UPRR alignment alternative could adversely affect the habitat of the same 29 special-status wildlife species that the I-680/I-580/UPRR alignment alternative could affect. This alignment also has the potential to impact marine/anadromous species.

#### *Wildlife Movement Corridors*

Impacts on wildlife movement corridors from this alignment alternative would be the same as for the I-680/580/UPRR alignment alternative.

#### *Water Resources/Wetlands*

This alignment alternative has the potential to directly impact approximately 2,610 ft (795.53 m) of potential nonwetland jurisdictional waters and approximately 5.2 ac (2.1 ha) of wetlands. The I-580/UPRR alignment alternative crosses or is adjacent to gravel pits filled with water as well as Arroyo Las Positas, Cayetano Creek, and other streams and water bodies.

#### *Conservation Plans*

Impacts on habitats and species identified in conservation plans from this alignment alternative would be the same as those for the I-680/580/UPRR alignment alternative.

#### **Patterson Pass/UPRR Alignment Alternative**

The Patterson Pass/UPRR alignment alternative could have direct impacts on 63.54 ac (25.71 ha) of grasslands, 0.88 ac (0.36 ha) of oak woodland/foothill pine, and 61.64 ac (24.94 ha) of urban/other developed lands. This alignment alternative could have indirect impacts on 3,503.56 ac (1,417.85 ha) of grasslands, 59.35 ac (24.02 ha) of oak and foothill pine woodlands, 62.57 ac (25.32 ha) of open waters, 1.27 ac (0.51 ha) of shrub lands, and 2,731.29 ac (1,105.32 ha) of urban/other developed lands.

#### *Sensitive Vegetation Communities*

The sensitive vegetation community within this alignment alternative is oak woodlands.

*Special-Status Plants*

The Patterson Pass/UPRR alignment alternative could adversely affect the habitat of 20 special-status plant species (Table 3.15-1). These 20 species are also in the I-680/580/UPRR and I-580/UPRR alignment alternatives.

*Special-Status Wildlife*

The Patterson Pass/UPRR alignment alternative could adversely affect the habitat of 28 special-status wildlife species, including species of invertebrates, amphibians, reptiles, raptors and other birds, and mammals (Table 3.15-1). This alignment alternative also has the potential to impact marine/anadromous species.

*Wildlife Movement Corridors*

Impacts on wildlife movement corridors from this alignment alternative would be the same as for the I-680/580/UPRR alignment alternative.

*Water Resources/Wetlands*

This alignment alternative has the potential to directly impact approximately 1,370 ft (417.58 m) of potential non-wetland waters and approximately 2.6 ac (1.05 ha) of wetlands.

*Conservation Plans*

Similar to the I-680/580/UPRR alignment alternative, the Patterson Pass/UPRR alignment alternative could adversely impact the East San Francisco Bay Core Area identified in the *Recovery Plan for the California Red-legged Frog* (U.S. Fish and Wildlife Service 2002).

**UPRR Alignment Alternative**

The UPRR alignment alternative could have direct impacts on 57.43 ac (23.24 ha) of grasslands, 0.88 ac (0.37 ha) oak woodland/foothill pine, and 64.90 ac (26.26 ha) of urban/other developed lands. This alignment alternative could have indirect impacts on 8,341.09 ac (3,375.53 ha) of agricultural lands, 3,665.27 ac (1,483.29 ha) of grasslands, 2.32 ac (0.94 ha) of oak and foothill pine woodlands, 50.81 ac (20.56 ha) of open waters, 9.78 ac (3.96 ha) of permanent freshwater wetlands, 34.32 ac (13.89 ha) of riparian habitat, 10.32 ac (4.18 ha) of seasonal wetlands, and 14,568.51 ac (5,895.69 ha) of urban/other developed lands.

*Sensitive Vegetation Communities*

The sensitive vegetation community within this alignment alternative is oak woodlands.

*Special-Status Plants*

The UPRR alignment alternative could adversely affect the habitat of 20 special-status plant species (Table 3.15-1). These 20 species are also in the I-680/580/UPRR and I-580/UPRR alignment alternatives.

*Special-Status Wildlife*

Similar to the I-680/580/UPRR alignment alternative, the UPRR alignment alternative could adversely affect the habitat of the same 28 special-status wildlife species that the Patterson Pass/UPRR alignment alternative could affect. This alignment alternative also has the potential to impact marine/anadromous species.

*Wildlife Movement Corridors*

Impacts on wildlife movement corridors from this alignment alternative would be the same as for the I-680/580/UPRR alignment alternative.

*Water Resources/Wetlands*

This alignment alternative has the potential to directly impact approximately 1,150 ft (350.52 m) of potential nonwetland jurisdictional waters and approximately 3.2 ac (1.29 ha) of wetlands. The



UPRR alignment alternative is adjacent to gravel pits filled with water, as well as Arroyo Mocho and other streams and water bodies.

#### *Conservation Plans*

The UPRR alignment alternative could adversely impact the East San Francisco Bay Core Area identified in the *Recovery Plan for the California Red-legged Frog* (U.S. Fish and Wildlife Service 2002).

#### **Tracy Downtown (BNSF Connection) Alignment Alternative**

The Tracy Downtown (BNSF Connection) alignment alternative could have direct impacts on 150.02 ac (60.71 ha) of agricultural lands, 62.57 ac (25.32 ha) of grasslands, 0.09 ac (0.04 ha) of oak woodland/foothill pine, 1.26 ac (0.51 ha) of open waters, 0.05 ac (0.02 ha) of permanent freshwater marsh, 0.14 ac (0.06 ha) of riparian habitat, 0.50 ac (0.20 ha) of seasonal wetlands, and 90.23 ac (36.51 ha) of urban/other developed lands. This alignment alternative could have indirect impacts on 8,644.54 ac (3,498.34 ha) of agricultural lands, 3,749.38 ac (1,517.33 ha) of grasslands, 3.41 ac (1.38 ha) of oak and foothill pine woodlands, 80.72 ac (32.67 ha) of open waters, 11.48 ac (4.65 ha) of permanent freshwater wetlands, 5.53 ac (2.24 ha) of riparian habitat, 34.55 ac (13.98 ha) of seasonal wetlands, 0.15 ac (0.06 ha) of shrub lands, and 3,563.73 ac (1,442.2 ha) of urban/other developed lands.

#### *Sensitive Vegetation Communities*

The sensitive vegetation communities in this alignment alternative are oak woodlands, riparian, permanent freshwater marsh, permanent freshwater wetlands, and seasonal wetlands.

#### *Special-Status Plants*

The Tracy Downtown (BNSF Connection) alignment alternative could adversely affect the habitat of 18 special-status plant species (Table 3.15-1).

#### *Special-Status Wildlife*

The Tracy Downtown (BNSF Connection) alignment alternative could adversely affect the habitat of 27 special-status wildlife species, including species of invertebrates, amphibians, reptiles, raptors and other birds, and mammals (Table 3.15-1). This is the same as the Tracy ACE (BNSF Connection) and Tracy ACE (UPRR Connection) alignment alternatives. This alignment alternative also has the potential to impact marine/anadromous species.

#### *Wildlife Movement Corridors*

Impacts on wildlife movement corridors from this alignment alternative would be the same as for the I-680/580/UPRR alignment alternative.

#### *Water Resources/Wetlands*

This alignment alternative has the potential to directly impact approximately 6,290 ft of potential nonwetland jurisdictional waters and approximately 4.4 ac (1.78 ha) of wetlands. The Tracy Downtown (BNSF Connection) alignment alternative crosses the San Joaquin River twice and crosses or is adjacent to several streams, canals, and other water bodies.

#### *Conservation Plans*

The Tracy Downtown (BNSF Connection) alignment alternative would not adversely affect habitats or species identified in any conservation plans.

#### **Tracy ACE Station (BNSF Connection) Alignment Alternative**

The Tracy ACE Station (BNSF Connection) alignment alternative could have direct impacts on 137.74 ac (55.74 ha) of agricultural lands, 84.62 ac (34.24 ha) of grasslands, 0.34 ac (0.14 ha) of oak woodland/foothill pine, 3.22 ac (1.3 ha) of open waters, 0.33 ac (0.13 ha) of permanent freshwater marsh, 0.45 ac (0.18 ha) of riparian habitat, 1.03 ac (0.42 ha) of seasonal wetlands, and 78.18 ac

(31.64 ha) of urban/other developed lands. This alignment alternative could have indirect impacts on 8,123.27 ac (3,287.38 ha) of agricultural lands, 4,816.88 ac (1,949.33 ha) of grasslands, 7.11 ac (2.88 ha) of oak and foothill pine woodlands, 170.86 ac (69.14 ha) of open waters, 19.84 ac (8.03 ha) of permanent freshwater wetlands, 31.04 ac (12.56 ha) of riparian habitat, 38.98 ac (15.77 ha) of seasonal wetlands, and 3,402.73 ac (1,377.04 ha) of urban/other developed lands.

#### *Sensitive Vegetation Communities*

The sensitive vegetation communities in this alignment alternative are oak woodlands, riparian, permanent freshwater marsh, permanent freshwater wetlands, and seasonal wetlands.

#### *Special-Status Plants*

The Tracy ACE Station (BNSF Connection) alignment alternative could adversely affect the habitat of 21 special-status plant species (Table 3.15-1). Of the 21 species identified, 18 are also in the Tracy Downtown (BNSF Connection) alignment alternative.

#### *Special-Status Wildlife*

The Tracy ACE Station (BNSF Connection) alignment alternative could adversely affect the habitat of 27 special-status wildlife species, including species of invertebrates, amphibians, reptiles, raptors and other birds, and mammals (Table 3.15-1). This alignment alternative also has the potential to impact marine/anadromous species.

#### *Wildlife Movement Corridors*

Impacts on wildlife movement corridors from this alignment alternative would be the same as for the I-680/580/UPRR alignment alternative.

#### *Water Resources/Wetlands*

This alignment alternative has the potential to directly impact approximately 7,678 ft (2,340 m) of potential nonwetland jurisdictional waters and approximately 3.6 ac (1.46 ha) of wetlands. The Tracy ACE Station (BNSF Connection) alignment alternative also crosses the San Joaquin River twice and crosses or is adjacent to several streams, canals, and other water bodies.

#### *Conservation Plans*

The Tracy ACE Station (BNSF Connection) alignment alternative would not adversely affect habitats or species identified in any conservation plans.

### **Tracy ACE Station (UPRR Connection) Alignment Alternative**

The Tracy ACE Station (UPRR Connection) alignment alternative could have direct impacts on 50.16 ac (20.3 ha) of agricultural lands, 52.63 ac (21.3 ha) of grasslands, 0.09 ac (0.04 ha) of oak woodland/foothill pine, 2.73 ac (1.1 ha) of open waters, 0.13 ac (0.05 ha) of permanent freshwater marsh, 0.31 ac (0.13 ha) of riparian habitat, 0.53 ac (0.21 ha) of seasonal wetlands, and 72.65 ac (29.4 ha) of urban/other developed lands. This alignment alternative could have indirect impacts on 2,951.15 ac (1,194.29 ha) of agricultural lands, 3,264.93 ac (1,321.28 ha) of grasslands, 6.63 ac (2.68 ha) of oak and foothill pine woodlands, 90.89 ac (36.78 ha) of open waters, 8.39 ac (3.4 ha) of permanent freshwater wetlands, 17.99 ac (7.28 ha) of riparian habitat, 13.63 ac (5.52 ha) of seasonal wetlands, and 3,202.19 ac (1,295.89 ha) of urban/other developed lands.

#### *Sensitive Vegetation Communities*

The sensitive vegetation communities in this alignment alternative are oak woodlands, riparian, permanent freshwater marsh, permanent freshwater wetlands, and seasonal wetlands.

#### *Special-Status Plants*

The Tracy ACE Station (UPRR Connection) alignment alternative could adversely affect the habitat of 20 special-status plant species (Table 3.15-1). Of the 20 species identified, 18 are also in the Tracy

Downtown (BNSF Connection) alignment alternative and 18 are in the Tracy ACE Station (BNSF Connection) alignment alternative.

*Special-Status Wildlife*

The Tracy ACE Station (UPRR Connection) alignment alternative could adversely affect the habitat of the same 27 special-status wildlife species as the Tracy ACE (BNSF Station) alignment alternative. This alignment alternative also has the potential to impact marine/anadromous species.

*Wildlife Movement Corridors*

Impacts on wildlife movement corridors from this alignment alternative would be the same as for the I-680/580/UPRR alignment alternative.

*Water Resources/Wetlands*

This alignment has the potential to directly impact approximately 5,325 ft (1,623 m) of potential nonwetland jurisdictional waters and approximately 2.6 ac (1.05 ha) of wetlands. The Tracy ACE Station (UPRR Connection) alignment alternative crosses the San Joaquin River, Tom Paine Slough, and several other streams, canals, and water bodies.

*Conservation Plans*

The Tracy ACE Station (UPRR Connection) alignment alternative would not adversely affect habitats or species identified in any conservation plans.

**Tracy Downtown (UPRR Connection) Alignment Alternative**

The Tracy Downtown (UPRR Connection) alignment alternative could have direct impacts on 76.16 ac (30.82 ha) of agricultural lands, 39.36 ac (15.93 ha) of grasslands, 0.09 ac (0.04 ha) of oak woodland/foothill pine, 1.26 ac (0.51 ha) of open waters, 0.05 ac (0.02 ha) of permanent freshwater marsh, 0.14 ac (0.06 ha) of riparian habitat, 0.06 ac (0.02 ha) of seasonal wetlands, and 99.69 ac (40.34 ha) of urban/other developed lands. This alignment alternative could have indirect impacts on 4,389.32 ac (1,776.3 ha) of agricultural lands, 2,661.16 ac (1,076.94 ha) of grasslands, 4.30 ac (1.74 ha) of oak and foothill pine woodlands, 73.34 ac (29.68 ha) of open waters, 6.79 ac (2.75 ha) of permanent freshwater wetlands, 5.53 ac (2.24 ha) of riparian habitat, 17.79 ac (7.2 ha) of seasonal wetlands, 0.15 ac (0.06 ha) of shrub lands, and 3,939.67 ac (1,594.33 ha) of urban/other developed lands.

*Sensitive Vegetation Communities*

The sensitive vegetation communities in this alignment alternative are oak woodlands, riparian, permanent freshwater marsh, permanent freshwater wetlands, and seasonal wetlands.

*Special-Status Plants*

The Tracy Downtown (UPRR Connection) alignment alternative could adversely affect the habitat of 22 special-status plant species (Table 3.15-1).

*Special-Status Wildlife*

The Tracy Downtown (UPRR Connection) alignment alternative could adversely affect the habitat of the same 27 special-status wildlife species as the Tracy ACE (BNSF Connection), Tracy ACE (UPRR Connection), and Tracy Downtown (BNSF Connection) alignment alternative. This alignment alternative also has the potential to impact marine/anadromous species.

*Wildlife Movement Corridors*

Impacts on wildlife movement corridors from this alignment alternative would be the same as for the I-680/580/UPRR alignment alternative.

*Water Resources/Wetlands*

This alignment alternative has the potential to directly impact approximately 7,500 ft (2,286 m) of potential nonwetland jurisdictional waters and approximately 4.2 ac (1.7 ha) of wetlands. The Tracy Downtown (UPRR Connection) alignment alternative crosses the San Joaquin River twice, Tom Paine Slough, and a number of other streams, canals, and water bodies.

*Conservation Plans*

The Tracy Downtown (UPRR Connection) alignment alternative would not adversely affect habitats or species identified in any conservation plans.

**East Bay Connections Alignment Alternative**

The East Bay Connections alignment alternative could have direct impacts on 16.2 ac (6.56 ha) of grasslands, 48.8 ac (19.75 ha) of grasslands, 4.6 ac (1.86 ha) of oak woodland/foothill pine, 1.0 ac (0.4 ha) of shrub lands, and 18.4 ac (7.44 ha) of urban/other developed lands. This alignment alternative could have indirect impacts on 310 ac (125.45 ha) of grasslands, 116.1 ac (46.98 ha) of oak and foothill pine woodlands, 17.8 ac (7.2 ha) of shrub lands, and 397.4 ac (160.82 ha) of urban/other developed lands.

*Sensitive Vegetation Communities*

The sensitive vegetation communities in this alignment alternative are oak woodlands.

*Special-Status Plants*

The East Bay Connections alignment alternative would not adversely affect the habitat of any special-status plant species.

*Special-Status Wildlife*

The East Bay Connections Alignment would not adversely affect the habitat of any special-status wildlife species.

*Wildlife Movement Corridors*

Impacts on wildlife movement corridors from this alignment alternative would be the same as the West Oakland to Niles Junction alignment alternative.

*Water Resources/Wetlands*

This alignment has the potential to directly impact approximately 375 ft (114 m) of potential nonwetland jurisdictional waters and approximately 1.2 ac (0.49 ha) of wetlands. The East Bay Connections alignment alternative crosses Niles Canyon and Morrison Canyon.

*Conservation Plans*

Impacts on habitats and species identified in conservation plans from this alignment would be the same as for the I-680/580/UPRR alignment alternative.

**East Bay to Central Valley Corridor Stations**

- Pleasanton (I-680/Bernal) Station: This station location option could have direct impacts on 6.4 ac (2.59 ha) of urban/other developed lands. This station location option could have indirect impacts on 10 ac (4.04 ha) of grasslands, 0.05 ac (0.02 ha) of shrubland, and 147 ac (59.49 ha) of urban/other developed lands. Impacts on special-status plant and wildlife species, waters, wetlands, and marine/anadromous species are not anticipated with this station location option.
- Pleasanton (BART) Station: This station location option could have direct impacts on 2.1 ac (0.85 ha) of grasslands and 9.4 ac (3.8 ha) of urban/other developed lands. This station location option could have indirect impacts on 98 ac (39.66 ha) of grasslands and 143 ac (57.87 ha) of urban/other developed lands. This station location option could adversely affect the habitat of one special-status plant species. This station location option could impact 482 linear ft (147 m)

of waters. Impacts on special-status plant and wildlife species, wetlands, and marine/anadromous species are not anticipated with this station location option.

- **Livermore (Downtown):** This station location option could have direct impacts on 9.8 ac (3.97 ha) of urban/other developed lands. This station location option could have indirect impacts on 0.1 ac (0.04 ha) of open water, 1 ac (0.4 ha) of grasslands, and 148 ac (59.89 ha) of urban/other developed lands. Impacts on special-status plant and wildlife species, waters, wetlands, and marine/anadromous species are not anticipated with this station location option.
- **Livermore (I-580) Station:** This station location option could have direct impacts on 3 ac (1.21 ha) of grasslands and 4.9 ac (1.98 ha) urban/other developed lands. This station location option could have indirect impacts on 25 ac (10.11 ha) of agricultural land, 114 ac (46.13 ha) of grasslands, and 152 ac (61.51 ha) of urban/other developed lands. This station could impact 1 ac (0.4 ha) of potential wetlands. Impacts on special-status plant and wildlife species, waters, and marine/anadromous species are not anticipated with this station location option.

**Livermore (Greenville Road/UPRR) Station:** This station location option could have direct impacts on 2.12 ac (0.86 ha) of grasslands and 7.94 ac (3.21 ha) of urban/other developed lands. This station option could have indirect impacts on 62.09 ac (25.13 ha) of grasslands, and 124.6 ac (50.43 ha) of urban/other developed lands. Impacts on special-status plant and wildlife species, waters, wetlands, and marine/anadromous species are not anticipated with this station location option.

- **Livermore (Greenville Road/I-580) Station:** This station location option could have direct impacts on 4.5 ac (1.82 ha) of grasslands and 4 ac (1.61 ha) of urban/other developed lands. This station could have indirect impacts on 10 ac (4.04 ha) of agricultural lands, 139 ac (56.25 ha) of grasslands, and 145 ac (58.68 ha) of urban/other developed lands. This station could impact 72 linear ft (22 m) of waters and 1.07 ac (0.43 ha) of potential wetlands. Impacts on special-status plant and wildlife species and marine/anadromous species are not anticipated with this station location option.
- **Tracy (Downtown) Station:** This station location option could have direct impacts on 7.5 ac (3.04 ha) of urban/other developed lands. This station location option could have indirect impacts on 11 ac (4.45 ha) of agricultural lands, 0.2 ac (0.08 ha) of grasslands, and 146 ac (59.08 ha) of urban/other developed lands. Impacts on special-status plant and wildlife species, waters, wetlands, and marine/anadromous species are not anticipated with this station location option.
- **Tracy (ACE) Station:** This station location option could have direct impacts on 0.2 ac (0.08 ha) of agricultural lands and 10 ac (4.04 ha) of urban/other developed lands. This station location option could have indirect impacts on 86 ac (34.8 ha) of agricultural lands, 35 ac (14.16 ha) of grasslands, and 133 ac (53.82 ha) of urban/other developed lands. This station location option could impact 0.08 ac (0.03 ha) of potential wetlands. Impacts on special-status plant and wildlife species, waters, and marine/anadromous species are not anticipated with this station location option.

### **Summary of East Bay to Central Valley Corridor Impacts**

#### *Sensitive Vegetation Communities*

The sensitive vegetation communities in the I-680/580/UPRR, I-580/UPRR, Patterson Pass/UPRR, and UPRR alignment alternatives are the same and include oak woodlands. The sensitive vegetation communities in the Tracy Downtown and Tracy ACE alignment alternatives are the same and include oak woodlands, riparian, permanent freshwater marsh, permanent freshwater wetlands, and seasonal wetlands.

#### *Special-Status Plants*

The I-680/I-580/UPRR and I-580/UPRR alignment alternatives could adversely affect the greatest number of special-status plant species. The Patterson Pass/UPRR alignment alternative would not



adversely affect the Mt. Hamilton thistle, the recurved larkspur, the rose-mallow, or the showy madia. The UPRR alignment alternative would not adversely affect the palmate-bracted bird's-beak.

#### *Special-Status Wildlife*

The I-680/I-580/UPRR and I-580/UPRR alignment alternatives could adversely affect the greatest number of special-status wildlife species. The Patterson Pass/UPRR and UPRR alignment alternatives would not adversely affect potential habitat for longhorn fairy shrimp, but the I-680/I-580/UPRR and I-580/UPRR alignment alternatives could adversely affect this habitat.

The Tracy ACE (BNSF Connection), Tracy ACE (UPRR Connection), Tracy Downtown (UPRR Connection), and Tracy Downtown (BNSF Connection) alignment alternatives could adversely impact the same special-status wildlife species.

#### *Wildlife Movement Corridors*

The I-680/I-580/UPRR, I-580/UPRR, Patterson Pass/UPRR, and UPRR alignment alternatives would bisect the major San Joaquin kit fox movement corridor between the southern portion of its range and the northern portion of its range along the west side of the San Joaquin Valley. This also applies to the Tracy ACE Station (BNSF Connection), Tracy ACE Station (UPRR Connection), Tracy Downtown (BNSF Connection), and Tracy Downtown (UPRR Connection) alignment alternatives.

#### *Water Resources*

This corridor has the potential to directly impact between approximately 7,075 ft (2,156 m) and 10,660 ft (3,249 m) of potential nonwetland jurisdictional waters and between approximately 4.5 ac (1.82 ha) and 10.8 ac (4.37 ha) of wetlands.

#### *Conservation Plans*

The I-680/I-580/UPRR and the I-580/UPRR alignment alternatives could adversely affect the Altamont Hills core area identified in the *Recovery Plan for Vernal Pool Ecosystems*, but the Patterson Pass/UPRR and the UPRR alignment alternatives would not adversely affect this core area. All four of these alignment alternatives could adversely impact the East San Francisco Bay Core Area identified in the *Recovery Plan for the California Red-Legged Frog*.

The Tracy ACE Station (BNSF Connection), Tracy ACE Station (UPRR Connection), Tracy Downtown (BNSF Connection), and Tracy Downtown (UPRR Connection) alignment alternatives are not anticipated to affect habitats or species identified in any conservation plans.

### San Francisco Bay Crossings

#### **Trans Bay Crossing – Transbay Transit Center Alignment Alternative**

The Trans Bay Crossing – Transbay Transit Center alignment alternative extends in a tube from the Oakland Inner Harbor to the City of San Francisco, crossing San Francisco Bay en route. If this alignment alternative were not constructed as a bored tunnel, it could have direct impacts on 22.1 ac (8.94 ha) of bay waters, 0.11 ac (0.04 ha) of grasslands, 1.6 ac (0.65 ha) of saline-brackish permanent wetlands, and 17.3 ac (7 ha) of urban/other developed lands. This alignment alternative could also have indirect impacts on 1,320.6 ac (534.46 ha) of bay waters, 0.22 ac (0.09 ha) of grasslands, 1.3 ac (0.52 ha) of open waters, 44.3 ac (17.93 ha) of saline-brackish permanent wetlands, and 659 ac (266.69 ha) of urban/other developed lands.

#### *Sensitive Vegetation Communities*

The sensitive vegetation community in this alignment alternative is the saline-brackish permanent wetlands. If this alignment alternative were constructed in a tunnel, impacts would likely not occur. Depending on construction technique, this alignment alternative may impact eelgrass habitat in the San Francisco Bay. The habitat for eelgrass is generally located at a depth of 2 m.

*Special-Status Plants*

The Trans Bay Crossing – Transbay Transit Center alignment alternative could adversely affect the habitat of one special-status plant species, the beach layia. As noted above, and if this alignment alternative were constructed in a tunnel, impacts on this species would likely not occur.

*Special-Status Wildlife*

This alignment alternative is not anticipated to adversely affect the habitat of special-status wildlife species or impact marine/anadromous species if it were constructed in a tunnel. Other tube construction methods could result in impacts on marine/anadromous species.

*Wildlife Movement Corridors*

The Trans Bay Crossing – Transbay Transit Center alignment alternative is not anticipated to impact wildlife movement corridors if constructed as a bored tunnel. If constructed as a trench on the floor of San Francisco Bay, sediment disturbance from construction could affect some fish species, including the Pacific herring. This alignment alternative could also adversely impact the movement corridors along the west and east shores of the San Francisco Bay.

*Water Resources/Wetlands*

This alignment alternative has the potential to directly impact approximately 22.83 ac (9.24 ha) of wetlands. Depending on construction methods, such as trenching, the crossing could result in substantial impacts on Bay waters and wetlands.

*Conservation Plans*

The Trans Bay Crossing – Transbay Transit Center alignment alternative would not adversely impact areas identified in conservation plans.

**Trans Bay Crossing – 4<sup>th</sup> & King Alignment Alternative**

Similar to the Trans Bay Crossing – Transbay Transit Center alignment alternative, the Trans Bay Crossing – 4<sup>th</sup> & King alignment alternative extends in a tube from the Oakland Inner Harbor to the City of San Francisco, crossing San Francisco Bay en route. This alignment alternative could have direct impacts on 20.07 ac (8.12 ha) of bay waters, 0.11 ac (0.04 ha) of grasslands, 1.62 ac (0.66 ha) of saline-brackish permanent wetlands, and 17.75 ac (7.18 ha) of urban/other developed lands. This alignment alternative could have indirect impacts on 1,240.83 ac (502.15 ha) of bay waters, 0.22 ac (0.09 ha) of grasslands, 1.34 ac (0.54 ha) of open waters, 44.34 ac (17.94 ha) of saline-brackish permanent wetlands, and 682.06 ac (276.02 ha) of urban/other developed lands.

*Sensitive Vegetation Communities*

The sensitive vegetation community in this alignment alternative is the saline-brackish permanent wetlands and eelgrass habitat.

*Special-Status Plants*

The Trans Bay Crossing – 4<sup>th</sup> & King alignment alternative could adversely affect the habitat of one special-status plant species, the beach layia (Table 3.15-1).

*Special-Status Wildlife*

This alignment alternative is not anticipated to adversely affect the habitat of special-status wildlife species or impact marine/anadromous species if the alignment is constructed in a tunnel.

*Wildlife Movement Corridors*

Similar to the Trans Bay Crossing-Transbay Transit Center Alignment, this alignment alternative is not anticipated to impact wildlife movement corridors if constructed as a bored tunnel. If constructed as a trench on the floor of San Francisco Bay, sediment disturbance from construction could affect some fish species, including the Pacific herring. This alignment alternative could also adversely impact the movement corridors along the west and east shores of the San Francisco Bay.

*Water Resources/Wetlands*

This alignment alternative has the potential to directly impact approximately 22.04 ac (8.92 ha) of wetlands. Regardless of construction methods, the crossing would still result in substantial impacts on Bay waters and wetlands.

*Conservation Plans*

The Trans Bay Crossing – 4th & King alignment alternative would not adversely impact areas identified in conservation plans.

**Dumbarton (High Bridge, Low Bridge, and Tube) Alignment Alternative**

The Dumbarton (High Bridge, Low Bridge, and Tube) alignment alternative could have direct impacts on 3.8 ac (1.54 ha) of bay waters, 6.2 ac (2.51 ha) of grasslands, 1.9 ac (0.77 ha) of oak woodland/foothill pine, 0.7 ac (0.28 ha) of open waters, 14.6 ac (5.91 ha) of saline-brackish permanent wetlands, 5.3 ac (2.14 ha) of salt flats, 4.3 ac (1.74 ha) of seasonal wetlands, 0.16 ac (0.06 ha) of shrub lands, 5.4 ac (2.19 ha) of unvegetated flats, and 70.6 ac (28.57 ha) of urban/other developed lands. This alignment alternative could have indirect impacts on 213.5 ac (86.4 ha) of bay waters, 322.0 ac (130.31 ha) of grasslands, 7.1 ac (2.87 ha) of managed bay marsh, 81.1 ac (32.82 ha) of oak and foothill pine woodlands, 59.4 ac (24.04 ha) of open waters, 599.8 ac (242.73 ha) of saline-brackish permanent wetlands, 416.1 ac (168.39 ha) of salt ponds, 138.6 ac (56.09 ha) of seasonal wetlands, 25.3 ac (10.24 ha) of shrub lands, 215.6 ac (87.25 ha) of unvegetated flats, and 3,145.5 ac (1,272.94 ha) of urban/other developed lands.

*Sensitive Vegetation Communities*

The sensitive vegetation communities in this alignment alternative include eelgrass habitat in the Bay and oak woodlands, riparian, permanent freshwater marsh, permanent freshwater wetlands, saline-brackish permanent, and seasonal wetlands.

*Special-Status Plants*

The Dumbarton (High Bridge, Low Bridge, and Tube) alignment alternative could adversely affect the habitat of 15 special-status plant species (Table 3.15-1).

*Special-Status Wildlife*

The Dumbarton (High Bridge, Low Bridge, and Tube) alignment alternative could adversely affect the habitat of 21 special-status wildlife species, including species of reptiles, shorebirds, and small mammals (Table 3.15-1). This alignment also has the potential to impact marine/anadromous species.

*Wildlife Movement Corridors*

The Dumbarton (High Bridge, Low Bridge, and Tube) alignment alternative could adversely impact the movement corridors in San Francisco Bay and along the west and east shores of the San Francisco Bay.

*Water Resources/Wetlands*

This alignment alternative has the potential to directly impact approximately 2,360 ft (719 m) of potential nonwetland jurisdictional waters and approximately 34 ac (13.76 ha) of wetlands. Regardless of type of construction, either bridge or tube, the crossing would still result in substantial impacts on Bay waters and wetlands.

*Conservation Plans*

The Dumbarton (High Bridge, Low Bridge, and Tube) alignment alternative would not adversely impact areas identified in conservation plans.

**Fremont Central Park (High Bridge, Low Bridge, and Tube) Alignment Alternative**

The Fremont Central Park (High Bridge, Low Bridge, and Tube) alignment alternative could have direct impacts on 4.48 ac (1.81 ha) of agricultural lands, 3.84 ac (1.55 ha) of bay lands, 3.20 ac (1.29 ha) of grasslands, 4.82 ac (1.95 ha) of open waters, 14.02 ac (5.67 ha) of saline-brackish permanent wetlands, 14.61 ac (5.91 ha) of salt flats, 3.07 ac (1.24 ha) of seasonal wetlands, 0.04 ac (0.02 ha) of shrub lands, 5.39 ac (2.18 ha) of unvegetated flats, and 53.93 ac (21.82 ha) of urban/other developed lands. This alignment alternative could have indirect impacts on 191.21 ac (77.38 ha) of agricultural lands, 213.53 ac (86.41 ha) of bay waters, 130.82 ac (52.94 ha) of grasslands, 7.10 ac (2.87 ha) of managed bay marsh, 267.81 ac (108.38 ha) of open waters, 615.21 ac (248.97 ha) of saline-brackish permanent wetlands, 903.90 ac (365.80 ha) of salt ponds, 104.39 ac (42.25 ha) of seasonal wetlands, 0.17 ac (0.07 ha) of shrub land, 215.24 ac (87.10 ha) of unvegetated flats, and 2,300.08 ac (930.81 ha) of urban/other developed lands.

*Sensitive Vegetation Communities*

The sensitive vegetation communities in this alignment alternative include eelgrass habitat in the Bay and oak woodlands, riparian, permanent freshwater marsh, permanent freshwater wetlands, saline-brackish permanent wetlands, and seasonal wetlands.

*Special-Status Plants*

The Fremont Central Park (High Bridge, Low Bridge, and Tube) alignment alternative could adversely affect the habitat of 16 special-status wildlife species (Table 3.15-1).

*Special-Status Wildlife*

The Fremont Central Park (High Bridge, Low Bridge, and Tube) alignment alternative could adversely affect the habitat of 23 special-status wildlife species, including species of aquatic invertebrates, amphibians, reptiles, shorebirds, and small mammals (Table 3.15-1). Species with limited habitats or ranges, such as the aquatic invertebrates, would be of special concern because of the adverse effects that even a small impact to their habitat could cause. This alignment alternative also has the potential to impact marine/anadromous species.

*Wildlife Movement Corridors*

The Fremont Central Park (High Bridge, Low Bridge, and Tube) alignment alternative could adversely impact the movement corridors in San Francisco Bay and along the west and east shores of the San Francisco Bay.

*Water Resources/Wetlands*

This alignment alternative has the potential to directly impact approximately 3,120 ft (951 m) of potential nonwetland jurisdictional waters and approximately 55.4 ac (22.42 ha) of wetlands. Similar to the Dumbarton alignment alternative, both the bridge and tube crossing would result in substantial impacts on Bay waters and wetlands.

*Conservation Plans*

The Fremont Central Park (High Bridge, Low Bridge, and Tube) alignment alternative would not adversely impact any areas identified in conservation plans.

*Special Management Areas*

The Fremont Central Park alignment alternative could adversely impact areas of the Don Edwards San Francisco Bay National Wildlife Refuge.

**Summary of San Francisco Bay Crossings Impacts***Sensitive Vegetation Communities*

Both of the Transbay Crossing alignment alternatives have the potential to impact Bay waters, saline-brackish permanent wetlands, and eelgrass habitat. As noted above, and if these alignment alternatives are constructed in a tunnel, impacts would likely not occur.

The sensitive vegetation communities within the Dumbarton and Fremont Central Park alignment alternatives include eelgrass, oak woodlands, riparian, permanent freshwater marsh, permanent freshwater wetlands, saline-brackish permanent, and seasonal wetlands

#### *Special-Status Plants and Wildlife*

The Trans Bay Crossing alignment alternatives could adversely affect the habitat of one special-status plant species. If either of these alignment alternatives were constructed in a tunnel, impacts on this species would likely not occur. These alignment alternatives are not anticipated to adversely affect the habitat of special-status wildlife species if constructed in a tunnel.

The Fremont Central Park alignment alternatives would have a greater direct and indirect impact to the natural areas on the east side of San Francisco Bay than the Dumbarton alignment alternatives. These natural areas include Bay lands, saline-brackish permanent wetlands, salt flats, salt ponds, and unvegetated flats. These habitats are crucial for a number of special-status plant and wildlife species that occur around the San Francisco Bay, including salt marsh harvest mouse and California clapper rail. The Fremont Central Park alignment alternatives could also adversely affect habitat for vernal pool tadpole shrimp and California tiger salamander, while the Dumbarton alignment alternatives would not.

#### *Wildlife Movement Corridors*

The Trans Bay Crossing alignment alternatives and the Dumbarton and Fremont Central Park alignment alternatives could adversely affect the wildlife movement corridors along the west and east shores of the San Francisco Bay as well as the Bay itself.

#### *Water Resources/Wetlands*

The Trans Bay Crossing – Transbay Transit Center alignment alternative has the potential to directly affect slightly more wetlands than the Trans Bay Crossing – 4<sup>th</sup> & King alignment alternative. Regardless of construction methods such as trenching, either crossing could result in substantial impacts on Bay waters and wetlands.

The Fremont Central Park alignment alternative would result in higher potential impacts to Bay waters and wetlands than the Dumbarton alignment alternative.

#### *Conservation Plans*

The Trans Bay Crossing alignment alternatives and the Dumbarton and Fremont Central Park alignment alternatives are not anticipated to adversely impact any areas identified in conservation plans. Each of these alignment alternatives would be subject to BCDC requirements and be coordinated with on-going Bay planning efforts.

#### *Special Management Areas*

The Fremont Central Park alignment alternative could have negative impacts on the Don Edwards San Francisco Bay National Wildlife Refuge, while the Dumbarton alignment alternatives would not.

### Central Valley Corridor

#### **BNSF – UPRR Alignment Alternative**

The BNSF – UPRR alignment alternative could have direct impacts on 190.89 ac (77.25 ha) of agricultural lands, 69.27 ac (28.03 ha) of grasslands, 2.00 ac (0.81 ha) of open waters, 0.13 ac (0.05 ha) of permanent freshwater marsh, 0.67 ac (0.27 ha) of riparian habitat, 0.20 ac (0.08 ha) of seasonal wetlands, and 262.51 ac (106.23 ha) of urban/other developed lands. This alignment could have indirect impacts on 15,115.94 ac (6,116.01 ha) of agricultural lands, 4,353.57 ac (1,761.83 ha) of grasslands, 114.42 ac (46.30 ha) of open waters, 17.88 ac (7.24 ha) of permanent freshwater wetlands, 69.75 ac (28.22 ha) of riparian habitats, 27.13 ac (10.98 ha) of seasonal wetlands, and 8,353.92 ac (3,380.73 ha) of urban/other developed lands.



*Sensitive Vegetation Communities*

The sensitive vegetation communities within this alignment alternative are riparian, permanent freshwater marsh, permanent freshwater wetlands, and seasonal wetlands.

*Special-Status Plants*

The BNSF-UPRR alignment alternative could adversely affect the habitat of 22 special-status plant species (Table 3.15-1).

*Special-Status Wildlife*

The BNSF-UPRR alignment alternative could adversely affect the habitat of 22 special-status wildlife species, including species of aquatic invertebrates, amphibians, reptiles, shorebirds, and small mammals (Table 3.15-1). Species with limited habitats or ranges, such as the aquatic invertebrates and the riparian brush rabbit, would also be of special concern because of the adverse effects that even a small impact to their habitat could cause. This alignment alternative also has the potential to impact marine/anadromous species.

*Wildlife Movement Corridors*

The BNSF-UPRR alignment alternative would bisect an east-west linkage corridor between the natural lands of the Central Valley (GEA and associated wildlife refuges) with the natural lands along the eastern side of the San Joaquin Valley.

*Water Resources/Wetlands*

This alignment alternative has the potential to directly impact approximately 10,140 ft (3,091 m) of potential nonwetland jurisdictional waters and approximately 3.8 ac (1.54 ha) of wetlands. The BNSF-UPRR alignment alternative crosses the Stanislaus River, San Joaquin River, Tuolumne River, Merced River, Chowchilla River, and a several streams, canals, and other water bodies.

*Conservation Plans*

The BNSF-UPRR alignment alternative would not adversely impact areas identified in conservation plans.

**BNSF Alignment Alternative**

The BNSF alignment alternative could have direct impacts on 262.26 ac (106.13 ha) of agricultural lands, 70.03 ac (28.34 ha) of grasslands, 0.59 ac (0.24 ha) of montane hardwood, 4.43 ac (1.79 ha) of oak woodland/foothill pine, 1.62 ac (0.66 ha) of open waters, 0.12 ac (0.05 ha) of permanent freshwater marsh, 0.67 ac (0.27 ha) of riparian habitat, 0.20 ac (0.08 ha) of seasonal wetlands, 1.22 ac (0.49 ha) of shrub lands, and 205.08 ac (82.99 ha) of urban/other developed lands. This alignment alternative could have indirect impacts on 17,311.87 ac (7,005.89 ha) of agricultural lands, 4,341.78 ac (1,757.06 ha) of grasslands, 97.60 ac (39.50 ha) of montane hardwood, 187.85 ac (76.02 ha) of oak and foothill pine woodlands, 104.22 ac (42.18 ha) of open waters, 15.13 ac (6.12 ha) of permanent freshwater wetlands, 62.73 ac (25.79 ha) of riparian habitats, 24.51 ac (9.92 ha) of seasonal wetlands, 44.60 ac (18.04 ha) of shrub lands, and 7,306.42 ac (2,956.82 ha) of urban/other developed lands.

*Sensitive Vegetation Communities*

The sensitive vegetation communities within this alignment alternative are riparian, permanent freshwater marsh, permanent freshwater wetlands, oak woodlands, and seasonal wetlands.

*Special-Status Plants*

The BNSF alignment alternative could adversely affect the habitat of 22 special-status plant species (Table 3.15-1). Of the 22 species identified, 21 would be the same as for the BNSF-UPRR alignment alternative.

*Special-Status Wildlife*

The BNSF alignment alternative could adversely affect the habitat of the same 22 special-status wildlife species as the BNSF-UPRR alignment alternative. This alignment alternative also has the potential to impact marine/anadromous species.

*Wildlife Movement Corridors*

Impacts to wildlife movement corridors for this alignment alternative would be the same as for the BNSF alignment alternative.

*Water Resources/Wetlands*

This alignment alternative has the potential to directly impact approximately 10,140 ft (3,090.67 m) of potential nonwetland jurisdictional waters and approximately 3.8 ac (1.54 ha) of wetlands. Similar to the BNSF-UPRR alignment alternative, this alignment alternative crosses the Stanislaus River, San Joaquin River, Tuolumne River, Merced River, Chowchilla River, and several streams, canals, and other water bodies.

*Conservation Plans*

The BNSF alignment alternative would not adversely impact areas identified in conservation plans.

**UPRR N/S Alignment Alternative**

The UPRR N/S alignment alternative could have direct impacts on 66.87 ac (27.06 ha) of agricultural lands, 42.28 ac (17.11 ha) of grasslands, 0.61 ac (0.25 ha) of open waters, 0.01 ac (0.004 ha) of permanent freshwater marsh, and 419.56 ac (169.79 ha) of urban/other developed lands. This alignment alternative could have indirect impacts on 8,341.09 ac (3,375.53 ha) of agricultural lands, 3,665.27 ac (1,483.29 ha) of grasslands, 2.32 ac (0.94 ha) of oak and foothill pine woodlands, 50.81 ac (20.56 ha) of open waters, 9.79 ac (3.96 ha) of permanent freshwater wetlands, 34.32 ac (13.89 ha) of riparian habitats, 10.32 ac (4.18 ha) of seasonal wetlands, 14,568.51 ac (5,895.69 ha) of urban/other developed lands, and 0.15 ac (0.06 ha) of valley oak woodland.

*Sensitive Vegetation Communities*

The sensitive vegetation communities in this alignment alternative are riparian, permanent freshwater marsh, permanent freshwater wetlands, oak woodlands, and seasonal wetlands.

*Special-Status Plants*

The UPRR N/S alignment alternative could adversely affect the habitat of 22 special-status plant species (Table 3.15-1). Of the 22 species identified, 14 would be the same as for the BNSF-UPRR alignment alternative.

*Special-Status Wildlife*

The UPRR N/S alignment alternative could adversely affect the habitat of 21 special-status wildlife species, including species of aquatic invertebrates, amphibians, reptiles, shorebirds, and small mammals (Table 3.15-1). This alignment alternative also has the potential to impact marine/anadromous species.

*Wildlife Movement Corridors*

The UPRR N/S alignment alternative would not disrupt any crucial wildlife movement corridors.

*Water Resources/Wetlands*

This alignment alternative has the potential to directly impact approximately 7,160 ft (2,182 m) of potential nonwetland jurisdictional waters and approximately 3.0 ac (1.21 ha) of wetlands. Similar to the BNSF-UPRR alignment alternative, this alignment alternative crosses the Stanislaus River, San Joaquin River, Tuolumne River, Merced River, Chowchilla River, and several other streams, canals, and water bodies.

*Conservation Plans*

The UPRR N/S alignment alternative would not adversely impact areas identified in conservation plans.

**BNSF Castle Alignment Alternative**

The BNSF Castle alignment alternative could have direct impacts on 254.46 ac (102.98 ha) of agricultural lands, 69.67 ac (28.19 ha) of grasslands, 0.39 ac (0.16 ha) of montane hardwood, 4.71 ac (1.91 ha) of oak woodland/foothill pine, 1.93 ac (0.78 ha) of open waters, 0.21 ac (0.08 ha) of permanent freshwater marsh, 0.83 ac (0.34 ha) of riparian habitat, 0.20 ac (0.08 ha) of seasonal wetlands, 1.13 ac (0.46 ha) of shrub lands, and 220.27 ac (89.14 ha) of urban/other developed lands. This alignment alternative could have indirect impacts on 16,963.29 ac (6,864.83 ha) of agricultural lands, 4,422.35 ac (1,789.67 ha) of grasslands, 93.65 ac (37.90 ha) of montane hardwood, 203.77 ac (82.46 ha) of oak and foothill pine woodlands, 91.85 ac (37.17 ha) of open waters, 14.51 ac (5.87 ha) of permanent freshwater wetlands, 57.76 ac (23.37 ha) of riparian habitats, 24.51 ac (9.92 ha) of seasonal wetlands, 53.76 ac (21.76 ha) of shrub land, and 7,700.82 ac (3,116.42 ha) of urban/other developed lands.

*Sensitive Vegetation Communities*

The sensitive vegetation communities in this alignment alternative are riparian, permanent freshwater marsh, permanent freshwater wetlands, oak woodlands, and seasonal wetlands.

*Special-Status Plants*

The BNSF Castle alignment alternative could adversely affect the habitat of 19 special-status plant species (Table 3.15-1). Of the 19 species identified, 18 would be the same as for the BNSF-UPRR alignment alternative.

*Special-Status Wildlife*

The BNSF Castle alignment alternative could adversely affect the habitat of the same 22 special-status wildlife species as the BNSF-UPRR and BNSF alignment alternatives. This alignment alternative also has the potential to impact marine/anadromous species.

*Wildlife Movement Corridors*

The BNSF Castle alignment alternative would bisect an east-west linkage corridor between the natural lands of the Sacramento Valley (GEA and associated wildlife refuges) and the natural lands along the eastern side of the San Joaquin Valley.

*Water Resources/Wetlands*

This alignment alternative has the potential to directly impact approximately 9,095 ft (2,772 m) of potential nonwetland jurisdictional waters and approximately 3.1 ac (1.25 ha) of wetlands. Similar to the BNSF-UPRR alignment alternative, this alignment alternative crosses the Stanislaus River, San Joaquin River, Tuolumne River, Merced River, Chowchilla River, and several other streams, canals, and water bodies.

*Conservation Plans*

The BNSF Castle alignment alternative would not adversely impact areas identified in conservation plans.

**UPRR-BNSF Castle Alignment Alternative**

The UPRR-BNSF Castle alignment alternative could have direct impacts on 162.30 ac (65.68 ha) of agricultural lands, 50.85 ac (20.58 ha) of grasslands, 0.39 ac (0.16 ha) of montane hardwood, 4.71 ac (1.91 ha) of oak woodland/foothill pine, 0.53 ac (0.21 ha) of open waters, 0.09 ac (0.04 ha) of permanent freshwater marsh, 0.24 ac (0.1 ha) of riparian habitat, 1.13 ac (0.46 ha) of shrub lands, and 338.99 ac (137.18 ha) of urban/other developed lands. This alignment alternative could have indirect impacts on 11,468.80 ac (4,641.28 ha) of agricultural lands, 3,934.37 ac (1,592.19 ha) of

grasslands, 93.65 ac (40.33 ha) of montane hardwood, 206.09 ac (83.40 ha) of oak and foothill pine woodlands, 48.52 ac (19.64 ha) of open waters, 8.21 ac (3.32 ha) of permanent freshwater wetlands, 28.32 ac (11.46 ha) of riparian habitats, 8.05 ac (3.26 ha) of seasonal wetlands, 53.76 ac (21.76 ha) of shrub lands, 12,879.80 ac (5,212.29 ha) of urban/other developed lands, and 0.15 ac (0.06 ha) of valley oak woodland.

#### *Sensitive Vegetation Communities*

The sensitive vegetation communities in this alignment alternative are riparian, permanent freshwater marsh, permanent freshwater wetlands, oak woodlands, and seasonal wetlands.

#### *Special-Status Plants*

The UPRR-BNSF Castle alignment alternative could adversely affect the habitat of 22 special-status plant species (Table 3.15-1). Of the 22 species identified, 16 would be the same as for the BNSF-UPRR alignment alternative.

#### *Special-Status Wildlife*

The UPRR-BNSF Castle alignment alternative could adversely affect the habitat of the same 22 special-status wildlife species as the BNSF-UPRR, BNSF, BNSF Castle, and UPRR-BNSF alignment alternatives. This alignment alternative also has the potential to impact marine/anadromous species.

#### *Wildlife Movement Corridors*

Impacts on wildlife movement corridors would be the same as for the BNSF Castle alignment alternative.

#### *Water Resources/Wetlands*

This alignment alternative has the potential to directly impact approximately 7,790 ft (2,374 m) of potential nonwetland jurisdictional waters and approximately 2.4 ac (0.97 ha) of wetlands. Similar to the BNSF-UPRR alignment alternative, this alignment alternative crosses the Stanislaus River, San Joaquin River, Tuolumne River, Merced River, Chowchilla River, and several other streams, canals, and water bodies.

#### *Conservation Plans*

The UPRR-BNSF Castle alignment alternative would not adversely impact areas identified in conservation plans.

### **UPRR-BNSF Alignment Alternative**

The UPRR-BNSF alignment alternative could have direct impacts on 98.74 ac (39.96 ha) of agricultural lands, 50.45 ac (20.42 ha) of grasslands, 0.61 ac (0.25 ha) of open waters, 0.01 ac (0.004 ha) of permanent freshwater marsh, 0.09 ac (0.04 ha) of riparian habitat, and 381.22 ac (154.27 ha) of urban/other developed lands. This alignment alternative could have indirect impacts on 9,621.45 ac (3,893.68 ha) of agricultural lands, 3,865.59 ac (1,564.36 ha) of grasslands, 2.32 ac (0.94 ha) of oak and foothill pine woodlands, 71.09 ac (28.77 ha) of open waters, 11.58 ac (4.69 ha) of permanent freshwater wetlands, 40.32 ac (16.32 ha) of riparian habitats, 10.66 ac (4.31 ha) of seasonal wetlands, 13,532.90 ac (5,476.59 ha) of urban/other developed lands, and 0.15 ac (0.06 ha) of valley oak woodland.

#### *Sensitive Vegetation Communities*

The sensitive vegetation communities in this alignment alternative are riparian, permanent freshwater marsh, permanent freshwater wetlands, oak woodlands, and seasonal wetlands.

#### *Special-Status Plants*

The UPRR-BNSF alignment alternative could adversely affect the habitat of 25 special-status plant species (Table 3.15-1). Of the 25 species identified, 19 would be the same as for the BNSF-UPRR alignment alternative.

*Special-Status Wildlife*

The UPRR-BNSF alignment alternative could adversely affect the habitat of the same 22 special-status wildlife species as the BNSF-UPRR, BNSF, and BNSF Castle alignment alternatives. This alignment alternative also has the potential to impact marine/anadromous species.

*Wildlife Movement Corridors*

Impacts on wildlife movement corridors would be the same as for the BNSF Castle alignment alternative.

*Water Resources/Wetlands*

This alignment alternative has the potential to directly impact approximately 8,835 ft (2,693 m) of potential nonwetland jurisdictional waters and approximately 3.0 ac (1.21 ha) of wetlands. Similar to the BNSF-UPRR alignment alternative, this alignment alternative crosses the Stanislaus River, San Joaquin River, Tuolumne River, Merced River, Chowchilla River, and several other streams, canals, and water bodies.

*Conservation Plans*

The UPRR-BNSF alignment alternative would not adversely impact areas identified in conservation plans.

**Central Valley Corridor Stations**

- Modesto Downtown Station: This station location option could have direct impacts on 4.7 ac (1.9 ha) of urban/other developed lands and indirect impacts on 147 ac (59.49 ha) of urban/other developed lands. This station location option could impact one special-status wildlife species. Impacts on special-status plant species, waters, wetlands, and marine/anadromous species are not anticipated with this station location option.
- Amtrak Briggsmore Station: This station location option could have direct impacts on 1.7 ac (0.69 ha) of agricultural lands, 4 ac (1.62 ha) of grasslands, and 4.2 ac (1.7 ha) of urban/other developed lands. This station location option could have indirect impacts on 41 ac (16.59 ha) of agricultural lands, 81 ac (32.78 ha) of grasslands, and 115 ac (46.54 ha) of urban/other developed lands. Impacts on special-status plant and wildlife species, waters, wetlands, and marine/anadromous species are not anticipated with this station location option.
- Merced (Downtown) Station: This station location option could have direct impacts on 8.4 ac (3.4 ha) of urban/other developed lands and indirect impacts on 143 ac (57.87 ha) of urban/other developed lands. This station could impact one special-status wildlife species. Impacts on special-status plant species, waters, wetlands, and marine/anadromous species are not anticipated with this station location option.
- Castle AFB Station: This station location option could have direct impacts on 8.4 ac (3.4 ha) of agricultural lands, 1 ac (0.4 ha) of grasslands, and 3.3 ac (1.34 ha) of urban/other developed lands. This station location option could have indirect impacts on 150 ac (60.70 ha) of agricultural lands, 22 ac (8.9 ha) of grasslands, and 88 ac (35.61 ha) of urban/other developed lands. This station location option could impact 315 linear ft (96 m) of waters. Impacts on special-status plant and wildlife species, wetlands, and marine/anadromous species are not anticipated with this station location option.

**Summary of Central Valley Corridor Impacts***Sensitive Vegetation Communities*

Each of the alignment alternatives in this corridor would have similar sensitive vegetation communities, including riparian, permanent freshwater marsh, permanent freshwater wetlands, and seasonal wetlands. In addition, all of the alignment alternatives would also have oak woodlands, except for the BNSF-UPRR alignment alternative.



*Special-Status Plants*

The UPRR-BNSF alignment alternative would have the potential to impact the greatest number of special-status plants. The BNSF Castle alignment alternative would have the potential to impact the least number of special-status plants.

*Special-Status Wildlife*

The BNSF, BNSF-UPRR, BNSF Castle, UPRR-BNSF Castle, and UPRR-BNSF alignment alternatives all have the potential to impact the same special-status wildlife species, including San Joaquin kit fox. The UPRR N/S alignment alternative is the only alignment that does not have the potential to impact the San Joaquin kit fox.

*Wildlife Corridor*

All of the alignment alternatives in this corridor would bisect a major linkage corridor between the natural lands of the Sacramento Valley (GEA and associated wildlife refuges) and the natural lands along the eastern side of the San Joaquin Valley.

*Water Resources*

This corridor has the potential to directly impact between approximately 7,160 ft (2,182 m) and 10,530 ft (3,210 m) of potential nonwetland jurisdictional waters and between approximately 2.4 ac (0.97 ha) and 3.8 ac (1.54 ha) of wetlands.

*Conservation Plans*

None of the alignment alternatives in this corridor is anticipated to adversely impact areas identified in conservation plans.

### 3.15.4 Role of Design Practices in Avoiding and Minimizing Effects

The Authority is committed to pursuing agreements with existing owners/rail operators to place the HST alignment within existing rail rights-of-way, which would avoid or minimize potential impacts on biological resources. A large percentage of the HST system would be either within or adjacent to a major existing transportation corridor (existing railroad or highway right-of-way). These existing transportation corridors, along which the HST system would be placed, have already impacted biological resources, so additional impacts would be minimized. Moreover, portions of the HST system would be on aerial structures or in tunnels. A smaller portion of the HST system would be in new at-grade rail corridors (not on aerial structure or in tunnel) and not within or adjacent to an existing transportation right-of-way. It is in these areas where there would be the greatest potential to impact biological resources. To lessen the effects on biological resources at these locations, culverts would be constructed at regular intervals to allow for the movement of wildlife species, such as San Joaquin kit fox, mountain lion, and deer. The alignment alternatives located in the mountain passes would include tunnels, which would avoid or substantially reduce surface impacts on sensitive biological resources, except at the tunnel portal areas. The HST system would be placed on bridges or elevated railways across water bodies or sensitive natural communities. The new bridges would replace older bridges whenever possible, and the new bridges would use materials and designs to minimize the number of piles/columns in the water. Additionally, the HST right-of-way width could also be reduced in constrained areas to minimize impacts on biological resources.

### 3.15.5 Mitigation Strategies and CEQA Significance Conclusions

Constructing the proposed HST has many environmental advantages over constructing a roadway in the same corridor, including the following.

- The track-bed is constructed so that water drains away, which maintains a dry environment that prevents unwanted vegetation from establishing.

- The track-bed has a porous, stable base that prevents runoff from concentrating, which keeps erosion to a minimum and filters out particulates and chemical pollutants.
- A service road, or other narrow access strip running alongside the track-bed, prevents spoils from shifting beyond the toe of the track-bed slope.
- Drainage ditches parallel to the track-bed prevent uncontrolled erosion, act as sediment traps, filter railway runoff, and insulate adjoining lands from uncontrolled channel flow.
- HST construction usually has a significantly smaller footprint than road construction.
- HST corridors are narrower than a road, so animals are more willing to cross under them.
- It is more feasible to elevate a HST system on a pile-supported structure than to elevate a road.

However, based on the analysis above, and considering the design practices described in Section 3.15.4, each of the HST Alignment Alternatives would have significant impacts on biological resources. Direct and indirect impacts on biological resources, including wetlands and other sensitive natural communities and special-status plant and wildlife species would be expected with each alignment alternative and at some of the station location options, although the extent of the impacts differs, as described in the text and Table 3.15-1.

The HST Alignment Alternatives could also pose a significant barrier to the movement of wildlife in areas where it severs wildlife movement corridors, such as those in the East Bay to Central Valley and the San Jose to Central Valley corridors.

The HST Alignment Alternatives could also conflict with conservation and restoration plans and special management areas.

At this programmatic level of analysis, it is not possible to know precisely the location, extent, and particular characteristics of biological resources that would be affected or the precise impacts on those resources. The impacts are therefore considered significant for each alignment alternative and all but 12 of the station location options. Mitigation strategies, as well as the design practices discussed above, would be implemented to reduce the impacts.

Mitigation of potentially major impacts on biological resources would be based first on avoidance. The strategy that would be followed early in the conceptual design stage of the project would be to avoid sensitive biological resources wherever feasible. Where potential impacts on biological resources are unavoidable, the strategy would focus on reducing the potential impact.

Resource agencies have expressed interest in helping to develop and participate in a mitigation planning and monitoring program to determine impacts and mitigation effectiveness for sensitive species in the lagoon areas. This approach could include site-specific baseline conditions, monitoring mitigation effectiveness as various HST elements are constructed, and adjusting mitigation measures as needed based on effectiveness and compatibility with lagoon restoration programs.

Because specific biological resource impacts cannot be predicted with certainty at this program level of analysis, specific mitigation measures also cannot be developed at this time. However, mitigation strategies are described below from which specific mitigation measures can be developed once the extent of direct and indirect biological resource impacts has been determined at the project level.

The following mitigation strategies would be applied at the project level for potential impacts on biological resources, when such strategies were appropriate and feasible, as determined by project-level analysis.

- **Plant Communities:** Mitigation strategies for affected plant communities include construction monitoring, onsite and/or offsite revegetation/restoration, and purchase of credits from an

existing mitigation bank. Mitigation ratios will vary, depending on the quality of the plant community affected and whether it provides habitat for sensitive plant or wildlife species. Regulatory agencies will be consulted to determine appropriate mitigation ratios. Onsite mitigation will be preferred to offsite mitigation whenever possible. Offsite mitigation will be located in the same watershed or in proximity to the impact area, where feasible.

- **Biological Resources Management Plans:** Biological Resources Management Plans (BRMP) specify the design and implementation of biological resources mitigation measures, including habitat replacement and revegetation, protection during construction, performance (growth) standards, maintenance criteria, and monitoring requirements. The USFWS, CDFG, and USACE will review draft BRMPs.

The primary goal of a BRMP is to ensure the long-term perpetuation of the existing diversity of habitats in the project area and adjacent urban interface zones. BRMPs will contain the following information.

- a. Specific measures for the protection of sensitive amphibian, mammal, bird, and plant species during construction.
- b. Identification and quantification of habitats to be removed, along with the locations where these habitats are to be restored or relocated.
- c. Procedures for vegetation analyses of adjacent protected habitats to approximate their relative composition, site preparation (clearing, grading, weed eradication, soil amendment, topsoil storage), irrigation, planting (container plantings, seeding), and maintenance (weed control, irrigation system checks, replanting). This information will be used to determine the requirements of the revegetation areas.
- d. Sources of plant materials and methods of propagation.
- e. Specific parameters for the determination of the amount of replacement habitat for temporary disturbance areas.
- f. Specification of parameters for maintenance and monitoring of re-established habitats, including weed control measures, frequency of field checks, and monitoring reports for temporary disturbance areas.
- g. Specification of performance standards for growth of re-established plant communities and cut-and-fill slopes.
- h. Remedial measures to be taken if performance standards are not met.
- i. Methodologies and requirements for monitoring of the restoration/replacement efforts.
- j. Measures to preserve topsoil and control erosion control.
- k. Design of protective fencing around environmentally sensitive areas (ESAs) and the construction staging areas.
- l. Specification of location and quantities of gallinaceous guzzlers (catch basin/artificial watering structures, if needed); specification of monitoring of water levels in guzzlers.
- m. Location of trees to be protected as wildlife habitat (roosting sites) and locations for planting of replacement trees.
- n. Specification of the purpose, type, frequency, and extent of chemical use for insect and disease control operations as part of vegetative maintenance within sensitive habitat areas.

- o. Specific construction monitoring programs for sensitive species.
  - p. Specific measures for the protection of sensitive habitats to be preserved. These measures may include (i.e., are not limited to) erosion and siltation control measures, protective fencing guidelines, dust control measures, grading techniques, construction area limits, and biological monitoring requirements.
  - q. Provisions for biological monitoring during construction activities to ensure compliance and success of protective measures. The monitoring procedures would (1) identify specific locations of wildlife habitat and sensitive species to be monitored, (2) identify the frequency of monitoring and the monitoring methodology (for each habitat and sensitive species to be monitored), (3) list required qualifications of biological monitor(s), and (4) identify reporting requirements.
- **Sensitive Plant Species:** Mitigation strategies for sensitive plant communities include preconstruction focused surveys, construction monitoring, relocation of plants, seed collection, plant propagation, outplanting to a suitable mitigation site, and participation in an existing HCP. Prior to construction, focused surveys will be conducted for sensitive plant species identified as occurring in the study area. Locations of sensitive plant species observed will be mapped on construction drawings. Research must be conducted on appropriate methods to use on a species-by-species basis. Some plant species may require transplantation, whereas others may germinate from seed, and still others may need to be propagated in a greenhouse prior to planting on an appropriate mitigation site. Also, see reference to BRMP, above.
  - **Weed Prevention:** Specific mitigation measures will be developed to minimize or avoid the spread of weeds during construction and operation. Preventive measures during construction include identification of areas with existing weed problems and measures to control traffic moving out of those areas (e.g., cleaning construction vehicles, limiting movement of fill). Mitigation for operational impacts would also be developed.
  - **Sensitive Wildlife Species:** Mitigation strategies for sensitive wildlife species include preconstruction focused surveys, construction monitoring, restoration of suitable breeding and foraging habitat, purchase of credits from an existing mitigation bank, and participation in an existing HCP. Prior to construction, focused surveys will be conducted for sensitive wildlife species identified as occurring in the study area. Locations of sensitive wildlife species observed will be mapped on construction drawings. Construction could be phased around the breeding season for sensitive wildlife species. Also, see reference to BRMP, above.
  - **Wildlife Movement/Migration Corridors:** Wildlife crossings would be of a design, shape, and size to be sufficiently attractive to encourage wildlife use. Overcrossings and undercrossings for wildlife would be appropriately vegetated to afford cover and other species requirements. Functional corridors would be established to provide connectivity to protected land zoned for uses that provide wildlife permeability. The following process would be used in design of corridors:
    - Identify the habitat areas the corridor is designed to connect.
    - Select several species of interest from the species present in these areas.
    - Evaluate the relevant needs of each selected species.
    - For each potential corridor, evaluate how the area will accommodate movement by each selected species.
    - Draw the corridors on a map.
    - Design a monitoring program.
  - **Jurisdictional Waters and Wetlands:** The amount of mitigation required will be assessed on an acreage basis, with ratios depending on the nature and condition of the jurisdictional areas

located in the impact areas. When appropriate, onsite mitigation will be preferred. Offsite mitigation will be located in the same watershed or as close to the area of impact as possible. Mitigation options for unavoidable impacts on state and federal jurisdictional waters will include onsite or offsite restoration, creation, or enhancement; mitigation banking; or in-lieu fee payments, as described below.

- Restoration—To return degraded habitat to a preexisting condition.
- Creation—To convert a persistent nonwetland habitat into wetland (or other aquatic) habitat. The created habitat may be self-sustaining or dependent on artificial irrigation.
- Enhancement—To increase one or more functions through activities, such as planting or eradicating nonnative vegetation.
- Passive Revegetation—To allow a disturbed area to naturally revegetate without plantings.
- Mitigation banking—To purchase units of wetland or waters habitat that have been restored or enhanced in a larger managed conservation area. The units are typically known as *credits* and are usually sold on an acreage basis.
- In-Lieu Fee Program—A monetary payment made to an agency-approved entity that provides habitat conservation or restoration. For instance, the Nature Conservancy may receive in-lieu fee payments for impacts in all watersheds.

Current federal and state policy emphasizes a "no net loss" of wetlands habitats policy, which is usually achieved through restoration of areas subject to temporary impacts or creation of wetlands to offset permanent impacts. However, the January 27, 2003, Special Public Notice for Mitigation and Monitoring Guidelines states that the USACE favors the use of approved mitigation banks or in-lieu fee programs in cases where they result in more regional or watershed benefit than onsite compensatory mitigation. Approved mitigation and in-lieu fee programs would include measures that ensure the no net loss of wetlands policy is met.

Site-specific impacts would need to be assessed and evaluated in a project-level environmental review, and specific mitigation measures for impacts on biological resources would be considered, such as preparing a wetland delineation; compensating for impacts on wetlands; conducting protocol-level surveys for listed species, surveys for nesting birds, and species-specific surveys; and compensating for temporary and permanent impacts on listed species. Site-specific mitigation measures will be developed through consultation with state and federally resource agencies. During project-level review, where the agencies determine that mitigation is required to address site-specific impacts from the HST system, one strategy may be to purchase easements to preserve habitat for sensitive biological resources. The Authority will coordinate with private land preservation trusts, local programs, and mitigation banks to help identify needs for habitat protection. The Authority will also coordinate with resource agencies to identify additional measures to limit impacts on, or otherwise protect, biological resources.

The feasibility of any mitigation strategy would have to be evaluated at the project-specific level and would depend on such factors as an assessment of the habitat impacted, the number of voluntary participants in local or regional programs, and the cost of acquiring easements. Possible mitigation strategies for severance of wildlife movement corridors could include alternative access, HST realignment, or overcrossings at select locations.

The above mitigation strategies are expected to substantially lessen or avoid impacts on biological resources in many circumstances. Sufficient information is not available at this programmatic level, however, to conclude with certainty that the above mitigation strategies will reduce impacts on biological resources to a less-than-significant level in all circumstances. This document, therefore, concludes that impacts on biological resources would remain significant, even with the application of mitigation strategies. Additional environmental assessment will allow a more precise evaluation in the second-tier project-level analysis.



As indicated earlier, the above analysis does not provide a parcel-specific potential impact analysis for impacts on biological resources. Subsequent project-level analysis would address local issues once the potential alignment alternatives are defined in more detail. Subsequent project-level environmental documentation would include more detailed information on existing habitat conditions, the presence/absence of special-status plant and wildlife species, the presence of sensitive natural communities, and the acreage of wetlands affected.

In order to address the impacts of the project on the unique assemblage of migratory birds, sensitive species, wetlands and habitat values within the approximately 240,000 ac (97,125 ha) designated as the GEA, this Final EIR/EIS indicates that certain measures are necessary to mitigate impacts identified at the program-level and the Authority would commit to the measures listed below in its decision documents. These measures have also been developed to address the following goals:

- Satisfy the future requirements of the resource agencies (e.g., USFWS, CDFG, and USACE) at the project level to offset impacts to wetlands, sensitive plant and animal species, and other biological resources in and around the GEA;
- Anticipate future pressures for growth in and around the GEA and provide a mechanism to prevent further impacts by forestalling that growth and preserving the habitat and scenic open space values in and around the GEA; and
- Provide assurance that project-level impacts on the GEA will be evaluated at the appropriate level of detail in the project-level EIR/EIS.

The following specific measures are necessary to mitigate program level impacts:

- a. An appropriate field survey of biological resources within areas of the GEA directly affected by proposed HST tracks or facilities, including San Joaquin kit fox, giant garter snake and important waterfowl nesting and breeding habitat to be included in the project-level environmental analysis.
- b. Project-level evaluation of the potential impacts to biological resources in the GEA from HST construction, operation and maintenance, including, but not limited to, ecosystem fragmentation impacts, impacts to wildlife movement corridors, impacts to waterfowl flight patterns, noise impacts, startle and vibration impacts, collision impacts, electrocution impacts, glare impacts, water quality and water flow impacts, impacts on waterfowl nesting and breeding, impacts on migratory habits, impacts from construction traffic, impacts of equipment storage and laydown areas, impacts from blasting and pile-driving, and impacts from temporary disruption of water supply deliveries.
- c. Minimize the footprint of necessary HST facilities to the extent feasible in the HST alignment crossing the GEA.
- d. In consultation with the CDFG, the USFWS, and the Grassland Water District, an evaluation in the project-level environmental analysis of the timing of construction activities within the GEA and measures to minimize disturbance during nesting and flooding seasons.
- e. In consultation with the CDFG, the USFWS, and the Grassland Water District, an evaluation in the project level environmental analysis of non-glare and directed lighting and appropriate measures to avoid disturbance impacts to sensitive species in areas of the GEA directly affected by proposed HST facilities.

- f. Acquisition from willing sellers by the Authority, or by other entities designated and supported by the Authority, of agricultural, conservation and/or open space easements encompassing at least 10,000 ac (4,047 ha) and generally located along or in the vicinity of the HST alignment and within or adjacent to the designated GEA. This measure would reduce impacts to and support conservation of wetlands and sensitive ecological areas, as well as limit urban encroachment in the vicinity of the HST through the GEA. The focus for these easements would be in areas undergoing development pressures, such as the areas around Los Banos and Volta, and/or areas that would be most appropriate for ecological conservation or restoration. The eventual locations and total acreage for these easements would be determined in conjunction with the project-level environmental analysis and decisions addressing the Gilroy to Merced portion of the HST system and in consultation with the CDFG, the USFWS, and the Grassland Water District.

